ESTES

CATALOG

FLYING MODEL ROCKETS 1995

WELCOME TO ESTES MODEL ROCKETRY!

In 1958, Estes Industries ignited the model rocketry world. In 1995 Estes has blasted model rocketry to new heights with the introduction of the Space Shuttle™ Starter Set and, the ultimate in model rocket construction material, TufFlite™.

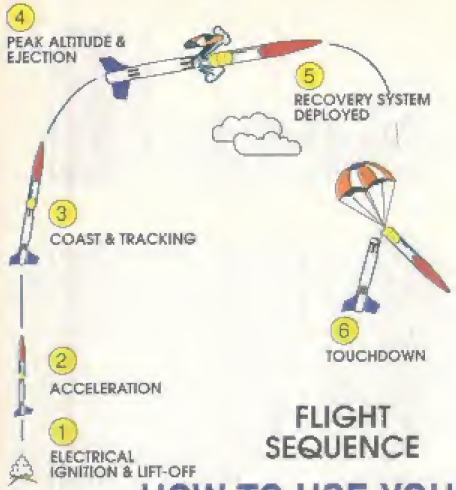
TufFlite™ - Estes new, innovative, strong, lightweight material is revolutionizing model rocket technology. It brings new dimensions, new ideas, and previously complex models to almost-ready-to-fly realities! This super material allows Estes to create rockets, planes and gliders with unique shapes, in large sizes, and with considerable detail. It is easy to repair with white glue and is extremely durable. The new Estes gliding Space Shuttle™

is just a small glimpse of the imaginative future world with Estes TufFlite™ modeling.

1995 also has Estes exploring other realms of model aviation. With the introduction of Estes Light Gliders™, Estes flies into the world of free flight model airplanes, with a barrage of easy-to-build, high performance gliders, both towline and rubber band powered. These model planes are beyond the ordinary tissue and stick gliders!

This year there is new excitement in the Beta level, with a whole array of interactive rocketry from the Fire Streak™ to the spinnin', spiralin' Corkscrew ™ to the fantastic performing Trans Wing Super Glider™. For those who enjoy a bit more building, Estes is pleased to serve up the incredible gliding SR-X ™ (inspired by the USAF hyper-secret Project Aurora) and the never-before scale modeled Mercury Atlas. The Sweet Vee™ will give the R/C soaring enthusiasts a thermal head rush!

Go for it! Model rocketry is Estes rocketry!



FLIGHT SEQUENCE

LAUNCH AREA:

Choose a large field away from power lines, tall trees, and low-flying aircraft. This chart shows the smallest recommended launch areas:

ENGINE TYPE	ESTIMATED ALTITUDE		MINIMUM LAUNCH SITE DIMENSION*	
ALL DELAYS	FEET	METERS	FEET	METERS
1/2A	200	61	50	15
A	400	122	100	30
B	800	244	200	61
C	1,600	488	400	122
D	1,800	549	500	152
E	2,000	610	600	183

* Minimum circular area = Diameter in feet or meters
Minimum rectangular area = Shortest side in feet or meters

Launch site must be free of obstructions and highly flammable materials.

HOW TO USE YOUR ESTES CATALOG

To get the most out of your catalog, please read this section. It will help determine what kit fits your needs and what the specifications are of that kit. This catalog is divided into kit series. Each series has a skill level: E2X® Series (almost ready to fly); Beta™ Series (skill level 1); Explorer™ Series (skill level 2); Challenge™ Series (skill level 3); and Master™ Series (skill level 4); Pro™ Series and Estes R/C are separate product lines. Kits in those series can range from easy to difficult. In this catalog each series contains an Introduction that gives you the characteristics of that skill level. Each kit listing gives you the kit name, its product number and price. In addition, you will find a kit description that gives you features, length, diameter and weight. You will also find the engines, from least to most powerful, that we recommend for that rocket. We will sometimes list an engine that we recommend in breezy conditions. "First Flight" indicates which engine should be used to become familiar with your rocket's flight profile. One of the more important features is the **Kit Feature Symbol**. These symbols will give the size and type of recovery system, type of fins, nose cone, decals and other features. Below is the symbol key. All nose cones are plastic.

RECOVERY SYSTEM:

- 24 — Plastic parachute with diameter in inches
- 18N — Nylon parachute with diameter in inches
- Streamer

NOSE CONE:

- Plastic

ENGINE HOOK:

- Quick release

DECALS:

- P — Pressure sensitive
- W — Water transferable

MAXIMUM ALTITUDE:

- 450 — In meters with most powerful engine recommended

FIN TYPE:

- B — Die-cut balsa
- P — Die-cut plastic
- F — Die-cut fiber
- Balsa stock
- Plastic fin unit

TABLE OF CONTENTS

Model Rocketry is recommended for those ages 10 years and up. Adult supervision is recommended for those under 12 years of age.
Use only Estes products with Estes model rockets. Unless specified, all models require assembly. Engines, launch system, glue and finishing supplies are not included with kits unless specified.

Prices may change without notice.

StarterSets

Starter sets are the best introduction to the wonderful world of model rocketry. Each starter set includes the versatile Porta-Pad® II launch pad and the highly reliable Electron Beam® launch controller. Starter sets include launch supplies for the first few flights so that each rocket can be flown over and over again. In 1995, Estes introduces two radically new interactive starter sets: the amazing, technologically revolutionary, almost ready to fly and glide Space Shuttle™ Starter Set and the huge rip roaring HeliCat™ Starter Set. The rockets that come with all Estes Starter Sets are incredibly easy to assemble, require no painting and in about an hour or less you'll be ready to launch! Our new starter sets feature even more fun in the sky than ever before.

*Unless otherwise specified, all models in this catalog require assembly.

StarterSets

New!

Each starter set requires four AA-type alkaline batteries and adhesive - not included.
Avg. Ship Wt. 1.4 Kg (3 lbs.)

SPACE SHUTTLE™
EST 1467

Space Shuttle™ Starter Set

MISSION: Planet Earth. Your giant Estes Space Shuttle (almost 15 inches long, 10 inches wide) poised, ready to command the sky. All systems are go! A push of the ignition button, a powerful "C" engine ignites, the shuttle leaps from the launch complex into the air. At peak altitude action happens- the power pod ejects, descending on a parachute. The rocket-powered shuttle swoops out of the sky realistically gliding, circling back, touching down for its next exciting mission.

What makes this possible? Estes new, revolutionary, strong, lightweight material called TufFlite. TufFlite makes the new gliding Space Shuttle super-simple to build (in minutes), needing no painting. The Shuttle features realistic self stick decals and a pre-assembled power pod. It is foolproof to trim and balance- guaranteed to fly 'n' glide!

Included are two mighty "C" size engines. You'll find everything you need (except glue and four AA batteries) to create your own space program - including the launch pad with electrical launch system. Start your countdown now!

Specifications:

Length: 37.5 cm (14.75"); Wing span: 25.4 cm (10.0"); Wt.: 199 gm (7.0 oz.); Engines: C6-3

New!

StarterSets

HELICAT™
EST 1465

HELICAT™

The huge, rip roaring HeliCat dominates the starter set scene with nearly 3 feet of rocket. This 'Cat is a cinch to build (under an hour)! No painting, plastic pre-colored fins and nose cone and pre-colored yellow body tube. The fun turns to non stop at launch — the HeliCat reaches maximum altitude (around 600 feet) and then the helicopter nose cone ejects, popping out three neon colored blades. The nose cone returns under whirly power, the rocket body returns with a colorful parachute. Includes 3 Cobra® Engines.

Specifications:
Length: 85.1 cm (33.5"); Dia.: 34.2 mm (1.346"); Wt.: 105 g (3.7 oz.); Engines: B4-2, B6-2 (First Flight), C6-3, C6-5

AIRWALKER™
EST 1410

AIRWALKER™

Sleek sounding rocket styling and a clear cargo bay highlight this sharp performer. Unique chrome-colored body tube, bright red fins and nose cone give this 50.8 cm (20") tall rocket a clean, professional appearance. Includes Cobra® engines and supplies for your first three flights.

Specifications:
Length: 50.8cm (20"); Dia: 27.7 mm (1.1"); Wt.: 57g (2oz); Engines: A8-3 (First Flight), B4-4, B6-4, B8-5, C5-3, C6-3, C6-5

Each starter set requires four AA-type alkaline batteries and adhesive - not included.
Avg. Ship Wt. 1.4 Kg (3 lbs.)

StarterSets

SUPER SHOT™
EST 1449

SUPER SHOT™

This two-rocket combo starter set delivers super value and super performance! The E2X® Series Super Shot™ rocket is the first step and features super-quick assembly, with pre-colored parts and hot decals. 42 cm (16-1/2") tall, tough and durable, it can be launched again and again up to 800 feet high and returns by parachute. The Twister™ is an Explorer™ Series rocket and includes crazy mind-twisting decals. Instead of a parachute, the 24 cm (9-1/2") tall Twister™ separates into two pieces and spins down helicopter style from up to 1000 foot altitudes! The ideal second rocket. Includes Cobra® engines and supplies for your first three super flights.

Specifications: Supershot Length: 42cm (16.5"); Dia: 25.4mm (1.0"); Wt.:45.5g (1.6 oz); Twister Length: 24.1cm (9.5") Dia: 18.7 mm (0.736") Wt.: 13.9 g (0.49 oz); Engines: Super Shot™ - A8-3 (First Flight), B4-4, B6-4, B8-5, C5-3, C6-3, C6-5
Twister™ - 1/2A6-2 (First Flight), A3-3, A8-5, B4-4, B4-6, B6-4, B6-6, B8-5

ALPHA® III
EST 1406

ALPHA® III

This set features the tried-and-true Alpha® III with bright orange and black decor. Assembly is easy with a one-piece plastic swept-fin unit. Great performance with parachute recovery for safe landings. Includes Cobra® engines and supplies for your first three flights.

Specifications: Length: 31.1 cm (12.25") Dia: 24.8 mm (0.976") Wt.: 34g (1.2 oz) Engines: A8-3 (First Flight), 1/2A6-2, A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7

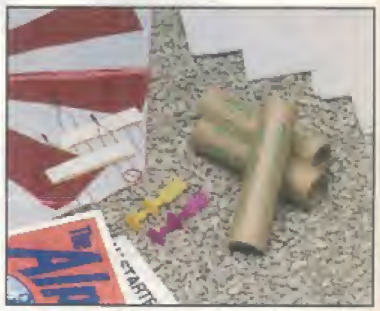
E2X® SERIES

E2X® SERIES
ALMOST READY TO FLY

There is no modeling or building experience required in this series. These rockets are so easy to assemble that:

- *They require very little cutting or sanding*
- *The instructions are clear and simple to follow*
- *There is no finishing or painting*
- *The kits assemble in less than one hour*

These precision engineered kits, with exacting plastic parts and pre-colored body tubes, let the novice assemble a rocket with a craftsmanship result. These kits span the spectrum of interactive rocketry: the Manta™ with a piggy back glider, the helicopter-recovered Skywinder™, the egg- carrying Omloid™ and the Hijax™ with its clear cargo section. The E2X® line of kits has features that everyone from the new rocket enthusiast to the most experienced rocket modeler will enjoy.



Unless otherwise specified, all models in this catalog require assembly.

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. .3 Kg (12 oz.)

E2X® SERIES

New!

MANTA™
EST 2097

HIJAX™
EST 2105

MANTA™

The Manta™ is the perfect first glider kit! A futuristic foam glider rides piggyback on the booster. At apogee, the glider detaches and circles home. The booster is recovered via a streamer. The Manta™ is easy to build – no painting!

Specifications:
Length: 41.9 cm (16.5"); Dia.: 24.8 mm (0.976"); Wt.: 51 g (1.8 oz.); Engines: A8-3 (First Flight), B4-2, B6-2

HIJAX™

The Hi Jax™ features a large, clear payload bay, parachute recovery and an eye-popping day-glow decor. This is a super-quick-building rocket. The plastic fins, nose cone and body tube are pre-colored (no painting required). The payload bay is big enough for bugs, small toy figures, glow sticks- almost anything you can imagine.

Specifications:
Length: 50.8 cm (20"); Dia.: 25.7 mm (1.0"); Wt.: 57 g (2.0 oz.); Engines: A8-3, (First Flight) B4-4, B6-4, B8-5, C5-3, C6-3, C6-5

E2X® SERIES

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. .3 Kg (12 oz.)

Launch an Egg!

OMLOID™
EST 2078

OMLOID™

With a huge 51 mm (2") diameter twist-together cargo capsule, you can fly an egg or all kinds of scientific payloads in this multi-purpose launch vehicle. Pre-colored and assembles in minutes! A 45 cm (18") reflective silver "chute brings it down safely even with heavy payloads. Perfect for school and science fair projects or just plain fun!

Specifications:
Length: 47.8 cm (18.8"); Dia.: 34.2 mm (1.346"); Wt.: (without egg) 70.8 g (2.5 oz.); Engines: with egg - C5-3, C6-3, without egg - B4-2 (First Flight), B6-2, C6-5

BAIL-OUT™
EST 2070

CATO™
EST 2071

BAIL-OUT™

Explore interactive rocketry with this model! Can eject your favorite 95 mm (3-3/4") action figure with a parachute (Sorry, figure is not included, but two chutes for your figure are!) Features include plastic fin unit, two 61 cm (24") parachutes for figure, special harness for your action figure and it's easy to build!

Specifications:
Length: 62 cm (24.5"); Dia.: 42 mm (1.64"); Wt.: without figure - 87 g (3.07 oz.), with figure -104 g (3.67 oz.); Engines: B4-2(First Flight), B6-4 (with no wind), C5-3, C6-3,. C6-5

CATO™

The supreme "gag" rocket, this rocket breaks apart into pieces after a short flight, is safely recovered in a small area, and re-assembles in minutes for flight after flight. Internal piston system shows how the ejection charge works in different ways! The Cato™ features multiple recovery systems - parachute, streamer and tumble. The Cato™ is easy to build and to fly!

Specifications:
Length: 53 cm (21.0"); Dia.:42 mm (1.64"); Wt.: 125 g (4.4 oz.); Engines: B6-0 (First Flight), C6-0

E2X® SERIES

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. .3 Kg (12 oz.)

Bandit™, Rampage™ and Dagger™ Kits Feature:

- *Pre-Colored Body Tubes*
- *Plastic Nose Cone and Fins*
- *Pre-Slotted Body Tubes*
- *Stick-On Decals*
- *No Painting*

BANDIT™
EST 2060

RAMPAGE™
EST 2061

DAGGER™
EST 2062

BANDIT™

The perfect beginner's model in a true almost ready-to-fly style. This rocket, capable of blazing performance, will be a guaranteed favorite. E2X® standard features include slotted body tubes for easy fin alignment and precision engineering for a fast build.

Specifications:
Length: 42 cm (16.5"); Dia.: 25.4 mm (1.0"); Wt.: 45.5 g (1.6 oz.); Engines: A8-3 (First Flight), B4-4, B6-4, B8-5, C5-3, C6-3, C6-5

RAMPAGE™

With slotted body tubes for easy alignment and strong fin attachment, a double thick body tube and plastic nose cone, this rocket will still be flying when the competition has given up. The Rampage™ has a payload section and can be assembled in less than an hour.

Specifications:
Length: 50 cm (19.5"); Dia.: 25.4 mm (1.0"); Wt.: 50.2 g (1.8 oz.); Engines: A8-3 (First Flight), B4-4, B6-4, B8-5, C5-3, C6-3, C6-5

DAGGER™

The flagship of our E2X® series, this rocket is sleek, long and lean. It's a winner whether it's on the pad, in the air or on display. This super quick build features a chrome-colored payload section, slotted body tube and pre-finished plastic fins.

Specifications:
Length: 57 cm (22.5"); Dia.: 25.4 mm (1.0"); Wt.: 53.5 g (1.9 oz.); Engines: A8-3 (First Flight), B4-4, B6-4, B8-5, C5-3, C6-3, C6-5

GNOME™
EST 0886

ALPHA® III
EST 1256

GNOME™

This mini-engine entry into the E2X® level is perfect for small flying fields. The Gnome's great features include an electric blue colored, one-piece, plastic fin unit; a chrome-colored body tube; and great performance!

Specifications:
Length: 26.04 cm (10.25"); Dia.: 13.8 mm (0.544"); Wt.: 12 g (0.42 oz.); Engines: 1/2A3-2T (First Flight), 1/2A3-4T, A3-4T, A10-3T

ALPHA® III

One of the oldest, most reliable, easiest-to-build rockets has a dynamic decor - glossy black body tube, fluorescent orange plastic fin unit and nose cone. This old-timer is a durable flier and requires no painting.

Specifications:
Length: 31.1 cm (12.25"); Dia.: 24.8 mm (0.976"); Wt.: 34 g (1.2 oz.); Engines: A8-3 (First Flight), 1/2A6-2, A8-5, B4-4, B4-6, B6-6, B8-5, C6-5, C6-7

EDX® SERIES

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. .3 Kg (12 oz.)

ATHENA™
EST 2026

PEGASUS™
EST 2076

TURBO COPTER™
EST 2096

ATHENA™

Gleaming and fast, rugged and beautiful, this model can smoke. With white and chrome plastic, the Athena™ will become one of your favorites! Performs great on a wide selection of engines.

Specifications:
Length: 38.1 cm (15.0"); Dia.: 24.8 mm (0.976"); Wt.: 36 g (1.27 oz.); Engines: A8-3 (First Flight), 1/2A6-2, A8-5, B4-4, B4-6, B6-6, B8-5, C6-5, C6-7

PEGASUS™

The Pegasus™ is ready to become the first in your stable of rockets. This great looking, sleek rocket is quick to build and quick to fly. Features durable and rugged construction and there's no painting required!

Specifications:
Length: 38.1 cm (15.0"); Dia.: 24.8 mm (0.976"); Wt.: 36 g (1.27 oz.); Engines: A8-3 (First Flight), 1/2A6-2, A8-5, B4-4, B4-6, B6-6, B8-5, C6-5, C6-7

TURBO COPTER™

Hot stuff! The Turbo Copter™ flies to over 1,000 feet and is super easy to build. This rocket has a wild helicopter-style recovered nose cone, a streamer-recovered main body, fluorescent colors, and hot, trendy graphics.

Specifications:
Length: 35.24 cm (13.875"); Dia.: 18.7 mm (0.736"); Wt.: 25.8 g (0.91 oz.); Engines: 1/2A6-2 (First Flight), A8-3, A8-5, B4-4, B6-4, B6-6, B8-5, C6-5, C6-7

SKYWINDER™
EST 2077

Copters Back To Earth!

SKYWINDER™

This amazing model assembles fast and launches like any "regular" model rocket, but at the peak of its flight, it transforms! Three helicopter blades with brightly colored decals unfold from the body and start spinning faster and faster, creating a kinetic color display and lowering the SkyWinder™ gently to the ground. It has one piece recovery and preps for flight in seconds - no wadding, parachute or streamer.

Specifications:
Length: 50.8 cm (20"); Dia.: 34.2 mm (1.346"); Rotor Span: 50.8 cm (20"); Wt.: 70.9 g (2.51 oz.); Engines: B4-2 (First Flight), B6-2, C6-3

BETA-TRON™

Create, Build and Fly Your Own Designs

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. 1.0 Kg (2 lbs.)

ROCKET BUILDER'S SET

An Introduction to Estes Rocket Building

BETA TRON™
EST 1464

- *Includes Estes Marking Guide which marks tube easily*
- *Easy-to-Use Technical Manual*
- *Custom Decals*

Two of many designs you can build

The Beta Tron™ is the logical next step after the E2X® Series because it teaches the basic skills of model rocket construction! The cornerstone of this set is the Rocket Builder's Marking Guide™ tool set, a series of tools that makes the construction of model rockets easier (see page 53 for more details on the Marking Guide). This set supplies everything you need to build two rockets including body tubes (BT-50 size), engine mounts, nose cones, two sets of die cut balsa, self-stick foil and water transferable decals, parachutes and streamer material, and a clear payload section - multiple designs are possible! Also includes a paper altitude tracking device, a modeler's Technical Manual, *Model Rocket News*, and three engines (A8-3, B6-4 and C6-5) with wadding, plugs and igniters.
Recommended Engines: A8-3, B6-4, C6-5

BETA™ SERIES

BETA™ SERIES
SKILL LEVEL 1

Interactive rocketry for the builder! These dramatic, high action kits will fill many modelers' needs: from the inexpensive Mosquito™ to the high performance, gliding Transwing™ to the crazy flying Corkscrew™.
The kits in this series have simple construction and although some modeling experience can be helpful (sanding, cutting, measuring and gluing), the rockets in this series will help you polish those skills.

The Beta™ Series features:

- *Die cut fins. Some kits require fin alignment, others have slotted body tubes for easier fin attachment.*
- *Simple painting*
- *Bright and exciting pressure sensitive or water transferable decals*
- *Up through "C" engine power.*

Unless otherwise specified, all models in this catalog require assembly.

BETA™ SERIES

New!

CORKSCREW™
EST 2114

New!

FIRESTEAK™
EST 2107

CORKSCREW™
With a canted fin and a canted engine, the Corkscrew™ goes wild upon engine ignition. Spinning and spiraling upward, it creates a zany smoke trail. The Corkscrew™ features thru-the-body tube fin construction for super durable rocket.

Specifications:
Length: 54 cm (21.25"); Dia.: 28 mm (1.1) Wt.: 53 g (1.9 oz); Engines: A8-3, (First Flight), B4-4, B6-2, B6-4, B8-5, C6-3, C6-5

FIRESTREAK™
Two long metallic looking gold and red streamers are the hot feature on the Firestreak. This rocket is an incredibly easy build (balsa fins attach through slotted body tubes for super strong attachment and positive alignment.) The "flame" decor makes this one radical looking rocket.

Specifications:
Length: 37.5 cm (14.75"); Dia.: 28 mm (1.1"); Wt.: 38.5 g (1.35 oz.); Engines: 1/2A6-2, A8-3 (First Flight), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C5-3, C6-3, C6-5.

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt..3 Kg (12 oz.)

TRANSWING™ SUPER GLIDER
EST 2112

New!

TRANSWING™ SUPER GLIDER
Blazing off the pad, this rocket begins its transformation at apogee — the Power Pod ejects and a set of wing panels flips out, changing the Transwing™ into a high-performance, long-duration super glider. The folded wings allow the Transwing™ to boost higher and in the extended position, glide longer. The Power Pod returns with a streamer. The Transwing™ features plastic parts for simplified construction - it's easy to build!

Specifications:
Length: 56.0 cm (22.0 "); Dia.: 24.8 mm (.976"); Glider Wt.: 58 g (2 oz.); Glider Wing Span: 61 cm (24"); Engines: B4-2, B6-2 (First Flight), C6-3

BETA™ SERIES

VIKING™
EST 1949

YELLOW JACKET™
EST 2008

ALPHA®
EST 1225

VIKING™

This high flier can be built with three, four or five fins in various arrangements, making it ideal for aerodynamic experiments and comparisons. Easy to build.

Specifications:
Length: 30.8 cm (12.125"); Dia.: 18.7 mm (0.736"); Wt.: 20.1 g (0.71 oz.); Engines: A8-3 (First Flight), A8-5, B4-4, B6-4, B8-5, C6-5, C6-7

YELLOW JACKET™

All around great performance is the hallmark of this terrific sport rocket. This easy-to-build flier features parachute recovery and water transferable decals.

Specifications:
Length: 42.7cm (16.8"); Dia.: 24.8 mm (0.976"); Wt.: 30.6 g (1.08 oz.); Engines: A8-3 (First Flight), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7

ALPHA®

The Alpha®, after over three decades, is still the perfect first or second rocket. Millions have been made and flown - a very reliable performer that can use a wide variety of engines! There is only one Alpha®!

Specifications:
Length: 31.1cm (12.25"); Dia.: 24.8 mm (0.976"); Wt.: 22.6 g (0.8 oz.); Engines: A8-3 (First Flight), 1/2A6-2, A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7

Uses ASA 200 Film
Easy to Build

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. .4 Kg (14 oz.)

ASTROCAM® 110 with Launch Vehicle
EST 1327

HELIO* COPTER™
EST 1995

BIG BERTHA™
EST 1948

ASTROCAM® 110

Imagine an image, taken hundreds of feet in the air from a rocket. This rocket gives you that ability. The AstroCam® 110 offers features such as the use of 200 ASA 110 film (film and developing available locally), critical camera parts are pre-assembled and it has a high quality optical grade lens.

Specifications: - Camera
Length: 16.5cm (6.5"); Dia.: 35.3mm (1.39"); Wt.: without film 38.5 g (1.36 oz.), with film - 49.8 g (1.76 oz.); Shutter Speed: 1/500 sec.; F-Stop: 11

Specifications - Camera and Launch Vehicle:
Length: 48.5 cm (19.1"); Dia.: 34 mm (1.34"); Wt.: 106.1 g (3.75 oz.); Engines: C6-7

HELIO COPTER™

With clean lines and eye popping decor, this rocket soars high on "C" engines. Then watch eyes open when the nose cone separates and deploys three spring-loaded helicopter blades and begins its slow, spinning descent to the ground.

Specifications:
Length: 64.5 cm (25.4"); Dia.: 34.2 mm (1.346"); Wt.: 81.8 g (2.89 oz.); Engines:
B4-2, B6-2, C6-3 (First Flight), C6-5

BIG BERTHA™

Burly, bad and beautiful! One of Estes' oldest kits is one of our most dynamic looking! This rocket has been a favorite of millions of rocket modelers - make it your favorite, too! The mighty "Bertha" sports futuristic self-adhesive decals!

Specifications:
Length: 61 cm (24"); Dia.: 41.6 mm (1.637"); Wt.: 62.3 g (2.2 oz.); Engines: B6-2 (First Flight), A8-3 (in no wind conditions), B4-2, B4-4, B6-4, B8-5, C6-5

BETA™ SERIES

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. .3 Kg(10 oz.)

ZINGER™
EST 1917

SPACE RACER™
EST 2039

SPARROW™
EST 0872

ZINGER™

Efficient aerodynamic design makes this our best performing single-stage rocket. Easily reaches 610 meters (2000 feet) in altitude, making it an excellent sport or competition model.

Specifications:
Length: 26 cm (10.25"); Dia.: 18.7 mm (0.736"); Wt.: 8.5 g (0.3 oz.); Engines: A8-5 (First Flight), B4-6, B6-6, C6-7

SPACE RACER™

This nifty rocket with the racy looks is easy to build and has "out-of-sight" performance. Features easy-to-finish fiber fins, a special plastic molded nose cone and can use a wide variety of engines.

Specifications:
Length: 32.1 cm (12.625"); Dia.: 18.7 mm (0.736"); Wt.: 20.8 g (0.73 oz.); Engines: 1/2A6-2 (First Flight), A8-3, A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7

SPARROW™

A mini model with big missile decor, this rocket is so lightweight that it only requires break-away recovery for safe landings! Additional features include fiber fins - no sealing required and colorful self-stick decals.

Specifications:
Length: 27.3 cm (10.75"); Dia.: 13.8 mm (0.544"); Wt.: 11.1 g (0.39 oz.); Engines: 1/2A3-2T (First Flight), A3-4T, A10-3T

MINI-PATRIOT™
EST 0896

NOVA PAYLOADER™
EST 1960

RELIANT™
EST 1986

MINI-PATRIOT™

The only mini engine scale (1:22 scale) model available! This semi-scale version features construction techniques that keep the painting simple. This model features fiber fins - no sealing required!

Specifications:
Length: 25.4 cm (10.0"); Dia.: 18.7 mm (0.736"); Wt.: 17.1 g (0.6 oz.); Engines: A3-4T (First Flight), A10-3T

NOVA PAYLOADER™

With its clear payload capsule, this easy-to-build rocket is perfect for launching small objects (such as toy figures, glow sticks, bugs, etc.) into new earth orbit about 1000 feet. A parachute brings everything safely to the ground.

Specifications:
Length: 53.7cm (21.1"); Dia.: 24.8 mm (0.976"); Wt.: 37.6 g (1.33 oz.); Engines: A8-3 (First Flight), B4-4, B6-4, B8-5, C6-5

RELIANT™

This hot performer features self-adhesive, sounding rocket decals and a quick release engine mount - a perfect beginner's rocket. Can use a wide selection of engines!

Specifications:
Length: 31.8 cm (12.5"); Dia.: 18.7 mm (0.736"); Wt.: 17.6 g (0.62 oz.); Engines: 1/2A6-2 (First Flight), A8-3, A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7

BETA™ SERIES

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. .3 Kg (12 oz.)

MONGOOSE™
EST 2092

MONGOOSE™
The perfect first two-stage rocket! The Mongoose™ has two one-piece fin units, colored body tubes, and it flies to over 1800 feet! This rocket builds very quickly and doesn't need paint. Can also be flown single stage.
Specifications:
Length: 67.3 cm (26.5"); Dia.: 24.8 mm (0.976"); Wt.: 65 g (2.3 oz.); Engines:
Single Stage: A8-3 (First Flight), B4-4, B6-4, B8-5, C6-5
Two Stage: First Stage - B6-0 (First Flight), C6-0; Second Stage - A8-5 (First Flight), B4-6, B6-6, C6-7

NINJA™
EST 0882

NINJA™
Dark and mysterious, this hot performer flies on mini engines. Builds quickly and makes an excellent first rocket.
Specifications:
Length: 26.8 cm (10.56"); Dia.: 18.7 mm (0.736"); Wt.: 15.9 g (0.56oz.); Engines: 1/2A3-4T (First Flight), A3-4T, A10-3T

YANKEE™
EST 1381

YANKEE™
This rocket has the performance worthy of an All American - capable of out-of-sight flights! This model has self-stick adhesive decals, streamer recovery and can use a wide selection of engines.
Specifications:
Length: 27.9 cm (11.0"); Dia.: 18.7 mm (0.736"); Wt.: 11.9 g (0.42 oz.); Engines: 1/2A6-2 (First Flight), A8-3, A8-5, B4-4, B4-6, B6-6, B8-5, C6-5, C6-7

WIZARD™
EST 1292

WIZARD™
You don't need magic to put this rocket up over 1/4 mile high - just plug in a "C" engine and go! A big 76 cm (30") streamer makes tracking and recovery easy.
Specifications:
Length: 30.5 cm (12.0"); Dia.: 18.7 mm (0.736"); Wt.: 22.4 g (0.79 oz.); Engines: A8-3 (First Flight), 1/2A6-2, A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7

MOSQUITO™
EST 0801

MOSQUITO™
Don't let size fool you - the smallest rocket in our fleet moves out fast and flies almost out-of-sight every time! Ultra lightweight construction and fantastic performance.
Specifications:
Length: 9.9 cm (3.9"); Dia.: 13.8 mm (0.544"); Wt.: 2.8 g (0.1 oz.); Engines: 1/2A3-4T (First Flight), A3-4T, A10-3T

THUNDERHAWK™
EST 2002

THUNDERHAWK™
Long, lean sport flier featuring super stable five fin construction. Simple to construct and finish, and delivers impressive performance.
Specifications:
Length: 55.9 cm (22"); Dia.: 24.8 mm (0.976"); Wt.: 34.6 g (1.22 oz.); Engines: A8-3 (First Flight), B4-4, B6-4, C6-5

EXPLORER™ SERIES

EXPLORER™ SERIES
SKILL LEVEL 2

Enjoy building model rockets and also want flying excitement? Looking for something different? The Explorer™ Series offers rockets with fascinating design and flight possibilities. In this series there are scale models like the Black Brant II™ and out of sight flying two stagers like the Hercules™ and Delta Clipper™. Explorer® Series also offers the fans of glider recovery the dual parasite glider , ARV Condor™ and sinister looking boost glider, the SR-X™ — Estes' version of the USAF rumored, hyper-sonic Project Aurora plane. In this series, you will find:

- A Variety of construction materials, aeroform, plastic, balsa,and paper.
- Painting and building skills required.
- Engine power ranges from "A" through "D".

Unless otherwise specified, all models in this catalog require assembly.

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. .3 Kg (10 oz.)

New!

SR-X™
EST 2115

BULL PUP 12D™
EST 1972

SR-X™
(Inspired by Project Aurora)

Mysterious, sleek, dark - that's how Estes' version of the US Air Force Project Aurora's hypersonic aircraft is classified. The SR-X™ (Strategic Reconnaissance - Experimental) is a boost glider featuring extraordinary capabilities. Easy to build and paint, the SR-X™ features a two-piece aeroform foam shell. In flight, at apogee, the ejection charge kicks out the Power Pod (recovered via parachute), activating the elevators and SR-X cruises back for its next not-too- secret mission!

Specifications:
Length: 45.7 cm (18.0"); Dia.: 33.7 mm (1.325"); Wing Span: 29.2 cm (11.5"); Wt.: 184.6 g (6.6 oz.); Engines: B4-2 (First Flight), B6-2, C5-3, C6-3

BULLPUP 12D™

This is our sport scale version of the U.S. Air Force's AGM-12D Bull Pup. The Bull Pup 12D™ is the perfect first scale model. Its unique appearance will make it stand out on the launch field or on display.

Specifications:
Length: 39.7 cm (15.625"); Dia.: 33.7 mm (1.325"); Wt.: 50.9 g (1.8 oz.); Engines: A8-3 (First Flight), B4-4, B6-4, B8-5, C6-5

EXPLORER™ SERIES

SOLAR WARRIOR™
EST 0895

TORNADO™
EST 2004

HERCULES™
EST 1377

SOLAR WARRIOR™
This colorful mini engine-powered kit features futuristic styling. Modeled with ion engine pods which help stabilize it for atmospheric flights. Great looks and great performance!

Specifications:
Length: 32.1 cm (12.64"); Dia.: 18.7 mm (0.736"); Wt.: 19 g (0.67 oz.); Engines: A3-4T (First Flight), A10-3T

TORNADO™
This rocket features recovery with a different spin. When the engine's ejection charge is activated, the Tornado™ separates into two sections. Each section then spins to the ground in a helicopter-style recovery.

Specifications:
Length: 24.1 cm (9.5"); Dia.: 18.7 mm (0.736"); Wt.: 13.9 g (0.49 oz.); Engines: 1/2A6-2 (First Flight), A8-3, A8-5, B4-4, B6-4, B6-6, B8-5

HERCULES™
Reach for the sky with two-stage flights of almost 1/2 mile high! Featuring a clear payload section, this model is ideal for high-altitude payload launching.

Specifications:
Length: 54.9 cm (21.6"); Dia.: 24.8 mm (0.976"); Wt.: 52.1 g (1.84 oz.); Engines: Single Stage - A8-3 (First Flight), B4-4, B6-4, B8-5, C6-5; OR: First Stage - B6-0 (First Flight), C6-0; Second Stage - A8-5 (First Flight), B6-6, B8-5, C6-7

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. .4 Kg (14 oz.)

DEEP SPACE TRANSPORT™
EST 2034

HAWKEYE™
EST 0873

MEAN MACHINE™
EST 1295

DEEP SPACE TRANSPORT™
Futuristic model of an interplanetary passenger/cargo vehicle. This rocket features a unique nose cone, tri-body design and a large three-color decal

Specifications:
Length: 67.3 cm (26.5"); Dia.: 33.7 mm (1.325"); Wt.: 106.1 g (3.75 oz.); Engines: B4-2 (First Flight), B6--2, C5-3, C6-3

HAWKEYE™
Military surface-to-air missile styling and out-of-sight flights are the trademarks of this fun flier. Features patriotic red, white and blue decor plus great performance.

Specifications:
Length: 21.6 cm (8.5"); Dia.: 13.8 mm (0.544"); Wt.: 11.9 g (0.42 oz.); Engines: 1/2A3-2T (First Flight), A3-4T, A10-3T

MEAN MACHINE™
Stand back on this one! Over six feet of body tube with a kick-in-the-pants "D" engine to boot. This tall, lean rocket is the perfect first "D" engine model and is a spectacular flier! Requires 5mm (3/16" diameter) Maxi-Rod™ (EST 2244) to launch.

Specifications:
Length: 200 cm (78.75"); Dia.: 41.6 mm (1.637"); Wt.: 164 g (5.8 oz.); Engines: D12-5

EXPLORER™ SERIES

MINI-COBRA™
EST 0898

DELTA CLIPPER™
EST 2067

BLACK BRANT II™
EST 1958

MINI-COBRA™
Fly to incredible altitudes with this ideal first two-stage rocket. Like all of our multi-staged models, the Mini-Cobra™ can be flown single-stage too.

Specifications:
Length: 25 cm (10"); Dia.: 13.8 mm (0.544"); Wt.: 13.21 g (0.47 oz.); Engines: Single Stage - A3-4T (First Flight), A10-3T; OR: First Stage - A10-0T; Second Stage - 1/2A3-4T

DELTA CLIPPER™
Those who love high performance will love this design-optimized, two-stage "D" rocket. This rocket is capable of over 1/2 mile of altitude. And to top it off, this model is constructed tough: thick-walled body tubes, slotted tubes for through-the-wall fin construction, and a plastic nose cone.

Specifications:
Length: 66 cm (26"); Dia.: 25.4 mm (1"); Wt.: 73.8 g (2.6 oz.); Engines: Single Stage: D12-5, D12-7; OR: First Stage - D12-0; Second Stage - D12-7

BLACK BRANT II™
High flying 1:13 scale model of the Bristol Aerospace sounding rocket used by the Canadian Armament Research and Development Establishment for upper atmospheric research. An ideal first "D" engine powered model.

Specifications:
Length: 63.2 cm (24.875"); Dia.: 33.7 mm (1.325"); Wt.: 64.8 g (2.29 oz.); Engines: D12-5 (First Flight), D12-7

Features Twin Glider Action!

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. .5 Kg (16 oz.)

A.R.V. CONDOR™
EST 2075

SCRAMBLER™
EST 2072

A.R.V. CONDOR™
This concept of a NOAA (National Oceanic and Atmospheric Administration) rocket travels to the highest reaches of our atmosphere via the booster vehicle. The two drones then detach for research missions. In our exciting version, the streamer-recovered booster pops two parasite gliders off at ejection. Gliders circle and chase each other gently back to the ground. Our kit features an easy-to-build, vacuum-formed plastic mounting system for the glider.**Specifications:**
Booster - Length: 47.0 cm (18.5"); Dia.: 24.8 mm (0.976"); Wt.: 32.0 g (1.13 oz.)
Drones - Length: 15.6 cm (6.13"); Dia.: 13.8 mm (0.544"); Wt.: 14 g (0.49 oz.) Engines: B4-2(First Flight), B6-2, C5-3, C6-3

SCRAMBLER™
Sturdy, reliable sport egg-lofter can haul all kinds of experimental cargo in its big 51 mm (2") diameter payload section. Boosts an egg and returns it un-scrambled!

Specifications:
Length: 55.0 cm (21.5"); Dia.: 51 mm (2.0"); Wt.: 71 g (2.51 oz.); Engines: Without egg - B4-2 (First Flight),B6-2, B8-5, C6-5; With egg - C5-3

Estes

Challenge™ series

CHALLENGE™ SERIES
SKILL LEVEL 3

Power, size, features - you will find these hallmarks in our Challenge™ Series of rockets. Here is where you will find models that demand the use the Estes E engine for full flight satisfaction. There is the easy-to-build, highly-affordable Maniac™ that will have you punching the sky in less than an hour (on E's, D's, even C engines). In this series you will find the beautifully detailed model of the SR-71 Blackbird™. Fans of glider rocketry will relish the building and flying of the fearsome Tomcat™ Swing-Wing Fighter.

Challenge™ Series requires more time and skill for assembly (except for the Maniac™). The rockets demand the use of adhesives such as epoxy or more advanced finishing and painting techniques. When the construction is done, the rocket is ready to put fire in the sky, you'll be proud of your accomplishment.

Unless otherwise specified, all models in this catalog require assembly.

Engines, launch system, glue, and finishing supplies not included
Avg. Ship Wt. .5 Kg (16 oz.)

Quick Building

MANIAC™
EST 2091

MANIAC™

You have to be crazy not to like this low-cost performer. Quick building, no painting, heavy-duty construction, and it flies on "E" engines to over 2000 feet! The Maniac™ also uses "D" engines, and with the optional quick-change engine mount (EST 3158) even flies on "C"s. Requires a 5 mm (3/16") Maxi™ Rod (EST 2244) or a 6 mm (1/4") launch rod to launch.

Specifications:
Length: 78.3 cm (30.8"); Dia.: 34 mm (1.35"); Wt.: 130 g (4.6 oz.); Engines: D12-5 (First Flight), D12-7, E15-6, E15-8; With optional (EST 3158) quick change mount, - C5-3, C6-3

SHADOW™
EST 2094

SHADOW™

No hiding this rocket – it's nearly four feet tall and 2.6 inches in diameter. The Shadow™ flies majestically to over 550 feet on "E"s and can be powered by "D" engines too! Kit includes a massive self-adhesive decal. Requires a 5 mm (3/16") Maxi™ Rod (EST 2244) or 6 mm (1/4") rod to launch.

Specifications:
Length: 120.7 cm (47.5"); Dia.: 66 mm (2.6"); Wt.: 239 g (8.5 oz.); Engines: D12-3 (First Flight), E15-4, E15-6

PHOENIX™
EST 1380

PHOENIX™

Huge, gorgeous 1:9 semi-scale model of the famous Phoenix™ air-to-air supersonic missile. This long-time Estes favorite has been upgraded to take "E" engines – it now flies to 900 feet! Magnificent for display or flight. Requires a 5 mm (3/16") Maxi™ Rod to launch.

Specifications:
Length: 76.2 cm (30"); Dia.: 66 mm (2.6"); Wt.: 186.8 g (6.6 oz.); Engines: D12-3 (First Flight), E15-4, E15-6

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. .5 Kg (16 oz.)

Estes Challenge™ series

COMANCHE-3™
EST 1382

SR-71 BLACKBIRD™
EST 1942

COMANCHE-3™

If two stages are not enough, here's three. And to really get this show moving fast, there is a "D" engine in the first stage. This rocket can fly over 1/2 mile in altitude and is recovered with a streamer. Can also be flown in a single or two stage configuration. A 5 mm (3/16") Maxi-Rod™ (EST 2244) is required for launch.

Specifications:
Length: 104.1 cm (41.0"); Dia.: 24.8 mm (0.976"); Wt.: 58.9 g (2.08 oz.); Engines: Single Stage A8-3 (First Flight), B4-4, B6-4, B8-5, C6-5; OR: Multi-Stage: First Stage - D12-0; Second Stage - B6-0 (First Flight), C6-0; Third Stage - A8-5 (First Flight), B4-6, B6-6, C6-7

SR-71 BLACKBIRD™

Jet black, lean and mean, the SR-71 smashed numerous speed and altitude records as far back as 1965. Some still stand after more than 25 years! After three decades of service, the SR-71 is now used by NASA for testing propulsion systems and materials for use in the X-30 program.

Specifications:
Length: 48.3 cm (19"); Dia.: 24.9 mm (0.976"); Wt.: 90.6 g (3.2 oz.); Engines: B4-2 (First Flight), B6-2, B6-4, B8-5, C6-5

• *Amazing Swing-Wing Action!*

TOMCAT™ Swing-Wing Rocket Glider
EST 2086

BROADSWORD™
EST 2093

TOMCAT™ Swing-Wing Rocket Glider

Out of the Estes skunk works, the Tomcat™ is ready for action! Climbs vertically with the wings swept back, then the engine's ejection charge activates the release mechanism, and the wings sweep forward into glide mode. The Tomcat™ soars down into a graceful circling glide path. Replace the engine, sweep the wings back, reset the release mechanism, and you're ready to go ballistic!

Specifications:
Length: 53.7 cm (21.12"); Wingspan: Swept - 26.0 cm (10.25"), Extended - 47.3 cm (18.63"); Wt.: 115 g (4.1 oz.); Engines: C6-3 (First Flight), C5-3

BROADSWORD™

Powered by "E" engines (but can fly on "D"s too!), this rocket boasts altitudes of almost 1,000 feet! The Broadsword™ is three feet tall, 2.6 inches in diameter, decked by a huge self-adhesive decal and features slow, realistic lift-offs. The Broadsword makes a bold statement! Requires a 5 mm (3/16") Maxi™ Rod (EST 2244) or 6 mm (1/4") rod to launch.

Specifications:
Length: 92.7 cm (36.5"); Dia.: 65 mm (2.56"); Wt.: 171 g (6 oz.); Engines: D12-3 (First Flight), D12-5, E15-4, E15-6

Masters™ SERIES

This is the goal of every rocket builder. These are highly-detailed flying rockets for the serious rocket modeler- the modeler who is proud of their construction skills.. The Mercury Atlas™ is the flagship of this series. With extensive plastic molded parts and body wraps that simulate stainless steel, this scale model is an impressive model whether on the pad or on display. The accurately-detailed, fully-stacked Space Shuttle™ features an actual gliding shuttle. Highly detailed Estes Commemorative Series models from the Star Trek® world also grace this level - the USS Enterprise™ and the infamous Klingon Battle Cruiser™. Master™ Series instills patience, quality, and skill along with construction satisfaction and flying fun.

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. .5 Kg (18 oz.)

New!

SPACE SHUTTLE™

Accurately detailed 1:162 scale model of America's most famous space vehicle. Like the real one, the orbiter glides back to Earth, while the external tank and boosters return under a 45 cm (18") parachute. Removable stabilizer fins plug in for flight. A great display and demonstration model.

Specifications:
Total Length: 34.5cm (13.6"); Orbiter Length: 22.9 cm (9"); Orbiter Wingspan: 18 cm (7.1"); Wt.: 124 g (4.37 oz.); Engines: C5-3 (First Flight), C6-3

MERCURY ATLAS SCALE MODEL™

The Mercury Atlas, a never-before-produced flying scale model. This 33 inch tall scale model features a wealth of intricate detail created in injection and vacuum-formed plastic. The Atlas also features simulated chrome-colored stainless-steel body wraps and comes with decals for all four manned Atlas missions. The Mercury Atlas is a beautiful model requiring only a minimal amount of painting. This model requires the addition of special stabilizer fins for flight. These are easily removed when displaying the Mercury Atlas. Requires 5mm (3/16") Maxi-Rod (EST 2244) (not included)

Specifications:
Length: 83.8 cm (33.0"); Dia.: 86.1 mm (3.39"); Wt.: 220 g (7.8 oz.); Scale: 1/35; Engines: D12-3 (First Flight), E15-4

COMMEMORATIVE SERIES

These two commemorative kits were re-released in 1992 to celebrate the 25th anniversary of Star Trek®. These flying model kits originally appeared in 1975.

STARSHIP ENTERPRISE®
EST 1275

KLINGON™ BATTLE CRUISER
EST 1274

STARSHIP ENTERPRISE® *SKILL LEVEL 4*

This "Constellation"-class starship was the flagship of the Federation. Its mission encompassed galactic security and exploration. Our version requires special modification (with the addition of the recovery probe) to fly in our atmosphere. The recovery probe can easily be disengaged. Other features include vacuum-formed plastic parts and highly accurate decals.

Specifications:
Length: 42.6 cm (16.8"); Recovery Probe Length: 77.2 cm (30.4"); Primary Hull Dia.: 19 cm (7.5") Wt.: 110 g (3.8 oz.); Engines: B6-2 (First Flight), C6-3

KLINGON™ BATTLE CRUISER *SKILL LEVEL 4*

In the 23rd century, the Klingon® Empire was the primary enemy of the Federation. The Battle Cruiser, with its fierce warriors and powerful weaponry, was the mainstay weapon platform of the Klingons. Our Klingon® replica features vacuum-formed plastic parts, water transferable and special chrome-colored self-adhesive decals.

Specifications:
Length: 39.4 cm (15.5"); Wingspan: 24.9 cm (9.8");Wt.: 70 g (2.5 oz.); Engines: B4-2 (First Flight), B6-4, C6-5

STAR WARS®

Now you can own these artifacts from a long time ago in a galaxy far, far away! Estes is pleased to reintroduce these Commemorative Series models from the exciting **Star Wars** saga.

X-wing Fighter™
EST 2103

R2-D2™
EST 2104

TIE Fighter™
EST 2102

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. .3 Kg (9 oz.)

X-wing Fighter™ *SKILL LEVEL 2*

A scale reproduction of the X-wing fighter piloted by Luke Skywalker. The Estes X-wing features a blow-molded, plastic fuselage, detailed plastic parts, die-cut balsa wings and authentic decals. Not only is the X-wing great for display, but it flies to over 300 feet!

Specifications:
Length: 27.6 cm (10.9"); Wing Span: 22.5 cm (8.9"); Dia.: 35.6 mm (1.4"); Wt.: 99.2 g (3.5 oz.); Engines: C6-3

R2-D2™ *SKILL LEVEL 2*

Estes is pleased to give you the flying version of the famous R2-D2 droid. Our R2-D2 is a 1:5 scale model standing nine inches tall. Kit includes a molded plastic body dome and tail cone, molded plastic legs and a detailed, self-adhesive body wrapper.

Specifications:
Length: 22.8 cm (9"); Dia.: 95.1 mm (3.74"); Wt.: 145 g (5.1 oz.); Engines: B6-2 (First Flight), C6-3

TIE Fighter™ *SKILL LEVEL 3*

For every good guy there's a bad guy. Estes presents the Imperial Forces TIE fighter. Kit features include a highly-detailed plastic cockpit and fuselage and vacuum-formed plastic energy panels. The Estes version requires a special stabilizing recovery probe for flight, which easily removes for display.

Specifications:
Length: 13.7 cm (5.4"); Wing Span: 12.7 cm (5"); Flying Length w/Probe: 53.2 cm (21"); Wt.: 107.4 g (3.8 oz.); Engines: C6-3

PRO™ SERIES

Estes high-powered product line can be found in the Pro™ Series. These are large models using, at the very least, single or clustered-"D" engines. All models also use the more powerful "E" engine. Engineered for performance and safety, we only recommend these rockets for modelers 16 years of age or older.

Rockets in this line feature rugged, yet simple construction designed to withstand the stresses of higher-powered flight. What do you get when you combine heavy-duty body tubes, through-the-wall fin mounting, plywood centering rings and rip-stop nylon parachutes? Models that are tough, but surprisingly lightweight.

Plus, we have the right accessories to go with these impressive models - The Command Control™ launch controller and the Power Plex™ launch pad. These are the ultimate in ruggedness, versatility and safety.

Unless otherwise specified, all models in this catalog require assembly

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. 1 Kg (2.2 lbs.)

These models require a 6 mm (1/4") launch rod and a heavy duty launch system such as the Power Plex™ and the Command Control™.

TERRIER/SANDHAWK™
EST 2083

JAYHAWK™
EST 2085

TERRIER/SANDHAWK™

Nearly four feet tall, this lightweight, but strongly-built 1:9.8 scale model is an excellent performer. Flies single stage in two configurations: as is or detach the Sandhawk™ and fly it alone! Scale data and documentation included.

Specifications:

Length: 116.8 cm (46.0"); Dia.: 46.6 mm (1.835"); Wt.: 244 g (8.6 oz.); Engines: Terrier/Sandhawk™ - D12-3, E15-4; Sandhawk™ - D12-5 (First Flight), E15-6; With EST 3158 Adapter - B4-2, B6-2, C6-3

JAYHAWK™

A magnificent, highly-detailed 1/5th scale model of the U.S. Navy's supersonic AQM-37A Missile Target drone. This unique-looking rocket will become your favorite, whether on display or in the air. The Jayhawk™ kit features giant, colorful, scale, water-transferable decals; a nylon parachute; slotted heavy-duty body tube; and plastic-molded nose cone and conduit.

Specifications:

Length: 76.2 cm (30"); Dia.: 63.5 mm (2.5"); Wt.: 245 g (8.6 oz.); Engines: D12-3 (First Flight), E15-4

ESTES PRO SERIES™ MODEL ROCKETS

These models require a 6 mm (1/4") launch rod and a heavy duty launch system such as the Power Plex™ and the Command Control™. Powered by "D" or E"s

IMPULSE™
EST 2064

PATRIOT™
EST 2066

MAXI-FORCE™
EST 2065

IMPULSE™

The power of two "D" engines, ignited simultaneously, whip this rocket into the air. The racy Impulse™ makes the introduction to clustering simple. This rocket is easy to build for the experienced rocket modeler. The Impulse™ features the standard heavy-duty Pro™ Series construction.

Specifications:
Length: 94 cm (37"); Dia.: 63.5 mm (2.5"); Wt.: 235 g (8.3 oz.); Engines: (two required) D12-5 (First Flight), D12-7, E15-6, E15-8

PATRIOT™

This is one HUGE 1/5 scale model of the Desert Storm veteran. The thunder and smoke of four "E"s, clustered together, hurl this model missile to over 1500 feet. This rocket is a rewarding build for the experienced modeler. Scale-contoured fins and conduits along with a highly-detailed decal sheet enhance this kit.

Specifications:
Length: 99 cm (39"); Dia.: 76.2 mm (3"); Wt.: 348 g (12.3 oz.); Engines: (four required) D12-5, D12-7, E15-6, E15-8
*FAA notification may be required to fly this rocket.

MAXI-FORCE™

With the combined force of three "E" engines, this huge bird roars to over 1600 feet altitude on a column of smoke. Definitely an attention-getter! Rugged construction and a tough rip-stop nylon parachute assure reliable, high-powered flights.

Specifications:
Length: 127 cm (50"); Dia.: 63.5 mm (2.5"); Wt.: 348 g (12.3 oz.); Engines: (three required) D12-7, E15-6, E15-8
*FAA notification may be required to fly this rocket.

r/c gliders

New!

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. .6 Kg (20 oz.)

SWEET VEE™
EST 2116

These radio-controlled aircraft are for the model aviation enthusiast who is looking for something unique. Rocket-powered model aircraft require R/C experience and R/C gear (servos, receivers, transmitters,etc. not included).

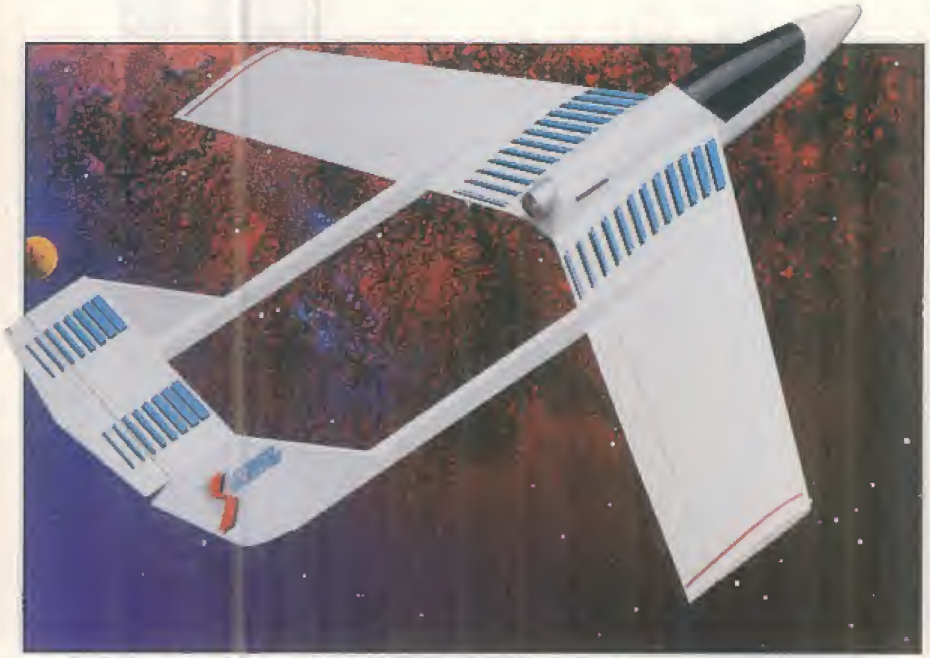
Great slope soarer too !!

SWEET VEE™

The R/C front engine rocket powered Sweet Vee is a high performance, long duration soaring glider. Wings build up with pre-cut foam cores and pre-cut Obeche wood covering. The fuselage is blow molded plastic and features a precut fiberglass boom. It comes complete with special plastic mechanical mixer and linkage eliminating the need for a complex computer radio or electronic mixing. The Sweet Vee needs at least a simple two channel radio with mini, micro or mid sized, servos- not included. This aircraft requires an easy to build special launch platform- plans included.

Specifications:
Wing Span: 139.7 cm (55") Length: 86.4 cm (34")
Wing Area: 22 sq. m (340 sq. in) Weight: 453.- 567.g (16- 20 oz.) Engines: D11-P, E15-P

r/c gliders



STRATO BLASTER™
EST 2090

STRATO BLASTER™

Go ballistic with our rocket-powered R/C gliders! The Strato Blaster™ features a blow-molded fuselage, covered foam wings and die-cut balsa parts. The Strato Blaster™ flies on E15-Ps (about 600 feet) or D11-Ps. It can be converted to fly R/C with an .049 glow engine, and is an excellent slope glider! The Strato Blaster™ requires R/C experience to fly, two-channel (minimum) mini or micro gear (R/C gear not included) and a 5 mm (3/16") Maxi™ Rod (EST 2244) or a 6 mm (1/4") launch rod to launch (The Estes Power Plex™ Launch Pad (EST 2235) is recommended).

Specifications:

Wingspan: 87.6 cm (34.5"); Length: 81.3 cm (32"); Wing Area: 14.1 sq. dm. (219 sq. in.); Wt. (typical): 369-454 g (13-16 oz.); Wing Loading (typical): 28.1 g/sq. dm. (9.2 oz./sq. ft.); Power: D11-P, E15-P, .049 glow engine

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship Wt. .6 Kg (20 oz.)

Converts to .049 Glow
Power in Seconds!

ASTRO BLASTER™
EST 2073

ASTRO BLASTER™

A new dimension in excitement for rocket enthusiasts and R/C modelers alike. Combining rocket boost glider technology with R/C aerobatic capability provides a model that delivers maximum flying fun! Includes a quick-change adapter for .049 glow engine power. In seconds, the Astro Blaster™ transforms into an aerobatic power ship, R/C rocket glider, slope soarer, .049-powered sport flier: 3-in-1 versatility! Features conventional quality model aircraft construction and requires two channel radio equipment with mini or micro flight pack (not included). Requires 5 mm (3/16") Maxi™ rod (EST 2244) or a 6 mm (1/4") launch rod to launch.

Specifications:

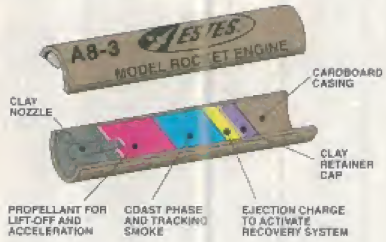
Wingspan: 91.4 cm (36"); Wt. (typical): 397 g (14 oz.); Wing Loading (typical) .026 g/sq. cm (8.6 oz./sq. ft.); Power: D11-P, E15-P, .049 glow engine

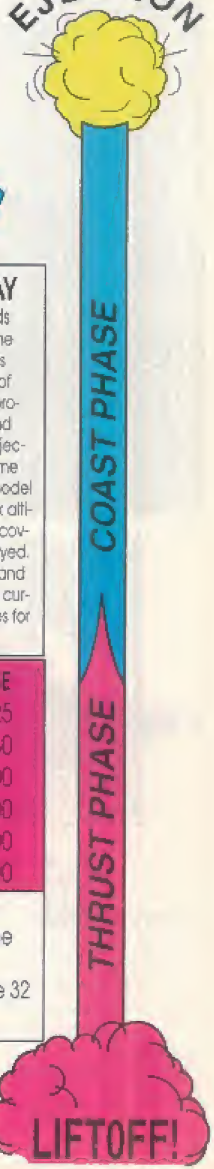
ENGINES OVER 35 SAFE YEARS

Safe, intelligent design, precise manufacture and strict engineering tolerances have made Estes model rocket engines the standard in the industry. They have been proven consistent and reliable in more than 300,000,000 launches.

Some important features are:

- Lightweight non-metallic casings made from specially formulated paper with clay nozzles
- Pre-loaded with propellant - the modeler does not handle any hazardous materials
- Estes engines comply with the codes of the National Fire Protection Association and are certified by the National Association of Rocketry.
- 3% of all Estes engines made are static-tested at the factory for reliability and adherence to performance specifications. If our standards aren't met, the engines are rejected and don't make it to market.
- The concept of the pre-assembled model rocket engine is the foundation of this safe, scientific and educational activity.





B **6** **4**

TOTAL IMPULSE

Unit = Newton-seconds

This letter indicates the **total impulse range** of the engine. **Total impulse** is the total power the engine produces, which basically indicates how much propellant it contains. Total impulse is measured in Newton-seconds. One Newton-second is the amount of total impulse produced by one Newton of thrust for a duration of one second. A five Newton-second engine ("B" type) could produce five Newtons of thrust for one second, ten Newtons for 1/2 second, or any combination that equals five Newton-seconds when multiplied. The chart below shows the possible values for each engine type.

AVERAGE THRUST

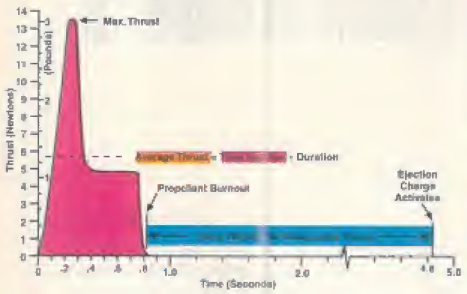
Unit = Newton

This number tells you the **average thrust** the motor delivers during the thrust phase. The **actual thrust** varies, and is shown on the time-thrust curve (see example below). For a particular engine size, let's say a "B", the propellant may be burned quickly, giving high thrust for a short time, or slowly, giving lower thrust for a longer time. A higher average thrust engine (B8) is best for heavier models, while a lower average thrust, longer burn engine (B4) is more efficient in smaller, lighter models.

TIME DELAY

Unit = seconds

The **time delay** is the number of seconds between the end of the thrust phase (propellant burned) and activation of the ejection charge. The time delay allows the model to coast to its peak altitude before the recovery system is deployed. The kit instructions and this catalog list the current engine choices for your model.



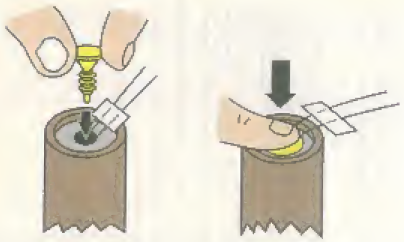
B6-4 Time Thrust Profile

TYPE	TOTAL IMPULSE
1/2A	0.626- 1.25
A	1.26-- 2.50
B	2.51-- 5.00
C	5.01--10.00
D	10.01--20.00
E	20.01--40.00

1/2 A-D Estes model rocket engines are produced at the maximum level in each category. E engines provide 32 ns total impulse.

IGNITER PLUGS - *Use only with Estes Engines*

Smart technology! Estes igniter plugs securely lock the igniter in place for dependable, safe ignition. Makes misfires due to incorrect igniter installation a thing of the past. Plus, they're reusable! Color-coded and tagged for easy identification, igniter plugs are now included with all Estes engines.



Engine Type		Plug Color
MINI	1/2A3,A3	Orange
	A10	Green
REGULAR	A8, B4	Yellow
	B6, C6	Magenta
	C11	Blue
D	D11, D12	White
E	E15	Red-Orange

COLOR CODING:

Estes model rocket engines have color-coded labels that indicate their applications.

Green Label - Single stage models

Purple Label - Upper stage or single stage, if used in very light models

Red Label - "0" delay engines, for use in booster stage and special projects only. Contain no delay or ejection charge.

Black Label - Special plugged engines are for R/C gliders. They contain no delay or ejection charge.

REGULAR ENGINES (3 per package with igniters & plugs)

SINGLE STAGE ENGINES (GREEN LABEL)

Prod. No.	Engine Type	Total Impulse lb.-sec.[1]	Total Impulse N-sec.[2]	Time Delay (±15%)	Max. Lift Wt. oz./g	Max. Thrust lb./N	Thrust Duration	Initial Weight oz.	Initial Weight g	Propellant Weight oz.	Propellant Weight g
1593	1/2A6-2*	0.28	1.25	2 sec.	2.5/ 70.8	2.88/12.8	0.20 sec.	0.53	15.0	0.055	1.56
1598	A8-3	0.56	2.50	3 sec.	4.0/113.2	3.00/13.3	0.32 sec.	0.57	16.2	0.110	3.12
1601	B4-2	1.12	5.00	2 sec.	4.0/113.2	3.00/13.3	1.20 sec.	0.70	19.8	0.294	8.33
1602	B4-4	1.12	5.00	4 sec.	3.5/ 99.1	3.00/13.3	1.20 sec.	0.74	21.0	0.294	8.33
1605	B6-2	1.12	5.00	2 sec.	4.5/127.4	3.00/13.3	0.83 sec.	0.68	19.3	0.220	6.24
1606	B6-4	1.12	5.00	4 sec.	4.0/113.2	3.00/13.3	0.83 sec.	0.71	20.1	0.220	6.24
1620	B8-5*	1.12	5.00	5 sec.	5.0/141.5	5.00/22.2	0.60 sec.	0.68	19.3	0.220	6.24
1617	C5-3*	2.25	10.00	3 sec.	8.0/226.4	5.00/22.2	2.10 sec.	0.90	25.5	0.450	12.70
1613	C6-3	2.25	10.00	3 sec.	4.0/113.2	3.00/13.3	1.70 sec.	0.88	24.9	0.440	12.48
1614	C6-5	2.25	10.00	5 sec.	4.0/113.2	3.00/13.3	1.70 sec.	0.91	25.8	0.440	12.48
UPPER STAGE ENGINES (PURPLE LABEL)											
1599	A8-5	0.56	2.50	5 sec.	2.0/ 56.6	3.00/13.3	0.32 sec.	0.62	17.6	0.110	3.12
1604	B4-6	1.12	5.00	6 sec.	1.5/ 42.5	3.00/13.3	1.20 sec.	0.78	22.1	0.294	8.33
1607	B6-6	1.12	5.00	6 sec.	2.0/ 56.6	3.00/13.3	0.83 sec.	0.78	22.1	0.220	6.24
1615	C6-7	2.25	10.00	7 sec.	2.5/ 70.8	3.00/13.3	1.70 sec.	0.95	26.9	0.440	12.48
BOOSTER ENGINES (RED LABEL)											
1608	B6-0	1.12	5.00	none	4.0/113.2	3.00/13.3	0.80 sec.	0.58	16.4	0.220	6.24
1616	C6-0	2.25	10.00	none	4.0/113.2	3.00/13.3	1.68 sec.	0.80	22.7	0.440	12.48

Regular engines are 7 cm (2.75 in.) long and 17.5 mm (0.69 in.) in diameter. Ship Wt. of each package of engines is approximately .1 Kg (4 oz.)

"Series II engines have semi-core-burning grain with large propellant burning area for high initial thrust with short thrust duration.

MINI ENGINES (4 per package with igniters & plugs)

SINGLE STAGE ENGINES (GREEN LABEL)

Prod. No.	Engine Type	Total Impulse lb.-sec.[1]	Total Impulse N-sec.[2]	Time Delay (±15%)	Max. Lift Wt. oz./g	Max. Thrust lb./N	Thrust Duration	Initial Weight oz.	Initial Weight g	Propellant Weight oz.	Propellant Weight g
1503	1/2A3-2T	0.28	1.25	2 sec.	2/ 56.6	1.75/ 7.8	0.36 sec.	0.198	5.6	0.062	1.75
1507	A3-4T	0.56	2.50	4 sec.	2/ 56.6	1.75/ 7.8	0.86 sec.	0.268	7.6	0.124	3.50
1511	A10-3T	0.56	2.50	3 sec.	5/141.5	3.00/13.3	0.26 sec.	0.277	7.9	0.133	3.78
UPPER STAGE ENGINES (PURPLE LABEL)											
1504	1/2A3-4T	0.28	1.25	4 sec.	1/ 28.3	1.75/ 7.8	0.363 sec.	0.212	6.0	0.062	1.75
BOOSTER ENGINES (RED LABEL)											
1510	A10-0T	0.56	2.50	none	5/141.5	3.00/13.3	0.26 sec.	0.235	6.7	0.133	3.70

Mini-engines are 4.4 cm (1.75 in.) long and 12.7 mm (0.5 in.) in diameter. Ship Wt. of each package of mini engines is approximately 1 Kg (2.5 oz.)

'D' ENGINES (3 per package with igniters & plugs)

SINGLE STAGE ENGINES (GREEN LABEL)

Prod. No.	Engine Type	Total Impulse lb.-sec.[1]	Total Impulse N-sec.[2]	Time Delay (±15%)	Max. Lift Wt. oz./g	Max. Thrust lb./N	Thrust Duration	Initial Weight oz.	Initial Weight g	Propellant Weight oz.	Propellant Weight g
1666	D12-3	4.48	20.00	3 sec.	14/396.2	6.4/28.5	1.70 sec.	1.49	42.2	0.879	24.93
1667	D12-5	4.48	20.00	5 sec.	10/283.0	6.4/28.5	1.70 sec.	1.52	43.1	0.879	24.93
UPPER STAGE ENGINES (PURPLE LABEL)											
1668	D12-7	4.48	20.00	7 sec.	8/226.4	6.4/28.5	1.70 sec.	1.55	44.0	0.879	24.93
BOOSTER ENGINES (RED LABEL)											
1665	D12-0	4.48	20.00	none	14/396.2	6.4/28.5	1.70 sec.	1.44	40.9	0.879	24.93
PLUGGED ENGINES for use with R/C rocket gliders **(BLACK LABEL)**											
1669	D11-P	4.48	20.00	none	16/453.1	6.2/27.6	1.82 sec.	1.55	44.0	0.879	24.93

'D' engines are 7 cm (2.75 in.) long and 24 mm (0.945 in.) in diameter. Ship Wt. of each package of 'D' engines is approximately .2 Kg (6.5 oz.)

'E' ENGINES (2 per package with igniters & plugs)

SINGLE STAGE ENGINES (GREEN LABEL)

Prod. No.	Engine Type	Total Impulse lb.-sec.[1]	Total Impulse N-sec.[2]	Time Delay (±15%)	Max. Lift Wt. oz./g	Max. Thrust lb./N	Thrust Duration	Initial Weight oz.	Initial Weight g	Propellant Weight oz.	Propellant Weight g
1680	E15-4	7.14	32.00	4 sec.	14/397	4.5/20.5	2.60 sec.	2.00	56.6	1.25	35.5
1682	E15-6	7.14	32.00	6 sec.	11/312	4.5/20.5	2.60 sec.	2.02	57.3	1.25	35.5
1684	E15-8	7.14	32.00	8 sec.	9/255	4.5/20.5	2.60 sec.	2.05	58.0	1.25	35.5
PLUGGED ENGINES for use with R/C rocket gliders **(BLACK LABEL)**											
1686	E15-P	7.59	34.00	none	15/425	4.5/20.5	2.60 sec.	2.12	60.0	1.31	37.2

'E' engines are 8.9 cm (3.5 in.) long and 24 mm (0.945 in.) in diameter. Ship Wt. of each package of 'E' engines is approximately .2 Kg (7.0 oz.)

Complete instructions, igniters and igniter plugs are included with each package of Estes model rocket engines

[1] Pound-seconds (Figures shown are optimum)

[2] Newton-seconds* (Figures shown are optimum)

* A Newton is the measurement of force required to move one kilogram of mass one meter per second per second. 1 Newton = 0.2248 pounds

ESTES MODEL ROCKET ENGINES HAVE BEEN PROVEN CONSISTENT AND RELIABLE IN MORE THAN 300,000,000 LAUNCHES!

ACCESSORIES

BLAST-OFF™ FLIGHT PACK
EST 1672

BLAST-OFF™ FLIGHT PACK

This great assortment of engines features 24 of our most popular engines. Included in the flight pack are 30 igniters plus a package of recovery wadding - an outstanding deal! The engines include six each of the A8-3, B6-4, C6-5 and C6-7 (upper stage engines, but also ideal for lightweight single stage rockets) engines. Includes 24 igniter plugs too!
Ship Wt. .7 Kg (1 lb. 8 oz.)

RECOVERY WADDING
EST 2274

RECOVERY WADDING

Flame resistant recovery wadding protects your recovery system from hot gases at ejection to ensure reliable deployment. Handy package contains 75 squares - enough for about 25 flights. Instructions for use are printed on the package.
Ship Wt. .2 Kg (6 oz.)

IGNITERS
EST 2301

IGNITERS

Dependable, easy-to-use Estes igniters in a convenient six-pack. It's always a good idea to keep a few spares around! Used with our new igniter plugs, the safest and most reliable ignition system available.
Ship Wt. 28 g (1 oz.)

COMMAND CONTROL™

This is it - the ultimate launch controller! Take command of your next launch. With NiCad batteries and heavy-duty launch cable, the Command Control™ can pour out enough current to ignite three or four-engine clusters as fast as you can push the button! Loaded with safety features and built to last. Ship Wt. .9 Kg (2 lbs.)

COMMAND CONTROL™ LAUNCH CONTROLLER EST 2234

- Audio and visual continuity indication
- LED voltage readout
- Super safe two-button launch system plus safety key
- Built-in igniter storage compartment
- Comes with 914 cm (30 feet) of heavy duty launch cable; winding and storage spool; and clip-whip cluster igniter connector
- Uses one or two 6 cell 7.2 hobby NiCad battery packs for power (not included - available at your local hobby dealer)
- The launch controller for all your model rocket launches

POWER PLEX™ LAUNCH PAD

Designed for our big Pro™ Series models, this versatile and rugged pad can handle any size model rocket since it accepts 3 mm (1/8"), 5 mm (3/16") and 6 mm (1/4") launch rods. Ultra-wide 102 cm (40") footprint plus feet that may be staked down ensure positive stability. Easy trajectory adjustment up to 30° from vertical in any direction. Folds up for convenient transport and storage. 6 mm (1/4") x 122 cm (48") two-piece launch rod, galvanized steel blast blast deflector and standoff included.
Ship Wt. 1.8 Kg (4 lbs.)

POWER PLEX™ LAUNCH PAD EST 2235

E2™ LAUNCH CONTROLLER EST 2236

A New Level of Safety

E2™ LAUNCH CONTROLLER

A two-fisted approach to launch rockets. Once the safety key is inserted, you get a red flashing visual and a beeping audio confirmation of continuity. The left button gets pushed to initiate or arm the E2™ and then, keeping the left button pushed, the right button is pushed to launch - the high-tech yet simple approach to maximum launch safety. The E2™ provides plenty of power for many launches with four "C" cells or one 7.2 volt R/C car-type battery (batteries not included). There is also built-in storage for the five meter (15 feet) igniter leads. Do not use for clustering - use the Command Control™ (EST 2234). Ship Wt. .9 Kg (2 lbs.)

TRANSROC II™ ROCKET LOCATOR EST 2237

• Now You Can Find Your Rocket or Other Items Easily!

TRANSROC II™ ROCKET LOCATOR

Recovery is easy with this compact, lightweight sonic tracking and locating system for model rockets. The on-board unit fits in any BT-20 or larger size rocket and emits a strong locator tone. The direction and frequency sensitive hand-held receiver will pinpoint the sending unit at up to 183 meters (600 feet) range. Includes headset and magnetic compass. Requires one 9 volt and one 6 volt (type 2CR1/3N) battery - not included. Ship Wt. .9 Kg (2 lbs.)

ELECTRON BEAM® LAUNCH CONTROLLER

The nerve center of any model rocket launch is found in a safe, electrically controlled launch system. It puts you in control You decide when to proceed with countdown and liftoff or whether you need to put your launch on hold. The Electron Beam® features 5.18 meters (17 feet) of launch wire with micro-clips for easy igniter hookup, a safety key to complete the electrical circuit, a continuity light to tell you that you have a complete circuit and a launch push button to commence your launch. The launch controller fits easily in your hand, has a snap-open battery compartment and self-adhesive decals. Requires four AA alkaline batteries - not included. Use only with Estes igniters (EST 2301). Use only our Command Control™ (EST 2234) system for clustering engines.

Specifications:

Length: 17.1 cm (6.75"); Width: 38 mm (1.5"); Depth: 31.8 mm (1.25"); Ship Wt.. 2 Kg (8 oz.)

ELECTRON BEAM® LAUNCH CONTROLLER
EST 2220

Extra Value !!

ELECTRON BEAM®/ PORTA-PAD® II COMBO
EST 2218

PORTA-PAD® II LAUNCH PAD
EST 2215

PORTA-PAD® II LAUNCH PAD

The perfect launch pad for small to medium-sized rockets (models that weigh 500 g (1 lb.) or less. The bright, easy-to-see Porta-Pad® II features easy setup and quick takedown, stable design and an easy - no tools required - tilt adjustment (Cannot be tilted more than 30° from vertical) for air direction.

The Porta-Pad® II also includes:

- A steel blast deflector plate with sturdy standoff attachment that is screwed onto the plate
- A two-piece, 3 mm (1/8") dia., 81 cm (32") long launch rod. The Porta-Pad® II can also accommodate the optional (not included) 5 mm (3/16") dia. Maxi™ Rod (required for most "D"-powered rockets). If you require a system that has a 6 mm (1/4") dia. rod, then please see our Power Plex™ launch pad (EST 2235).
- A safety key and launch rod cap that fits the Electron Beam® and E2™ Launch Controllers is included.

Ship Wt. .7 Kg (24 oz.)

5 mm (3/16") Dia. Two-Piece Maxi™ Rod
Ship Wt. .3 Kg (12 oz.) EST 2244

3 mm (1/8") Dia. Two-Piece Launch Rod
Ship Wt. .2 Kg (6 oz.) EST 2243

Launch Rod Safety Cap with Safety Key
(will not fit the Command Control™)
Ship Wt. .1 Kg (4 oz.) EST 2205

Blast Deflector Plate with Standoff
Ship Wt. .1 Kg (5 oz.) EST 2241

Makes Rocket Building Easy!

ROCKET BUILDER'S MARKING GUIDE™
EST 2227

Customize Your Rockets!

DECAL PACKS
EST 2995, 2996, 2997

ROCKET BUILDER'S MARKING GUIDE™

This hi-tech plastic tool set is indispensable for both the experienced and rookie modeler. The Rocket Builder's Marking Guide™ makes it easy to mark fins (three fins at 120° apart, and four fins at 90° apart) and launch lug placement on almost any Estes body tube. The tool set also includes a multi-faceted angled ruler. It can measure (inches and metric), has a special pencil holder to mark tube circumference and a fin-gluing jig for fins (up to 3 mm thick). The angle is the ideal tool to mark fin and launch lug lines down any body tube. A special slide mechanism holds the tube in place. There's no end to what it can do!

Includes: Two "stacked disks" for fin and launch lug marking. One for BT-5, BT-50, and BT-60 tubes and the other fits BT-20, BT-55, and BT-80 tubes; angled ruler; decals, and complete instructions. Ship Wt. .5 Kg (1 lb.)

DECAL PACKS

Apply these boldly colored, graphically-designed decals anywhere--Estes rockets, model cars, airplanes, notebooks, skateboards--you name it!

Assortment one features water transferable decals with U.S. flags, military "Stars and Bars", letters and numbers, patriotic symbols (EST 2995)

Assortment two includes self-adhesive chrome foil decals with hatches, cockpits, and fin and body tube decorations (EST 2996)

Assortment three has water transferable body tube wraparounds (EST 2997) Ship Wt. .3 Kg (9 oz.)

DESIGNER'S SPECIAL™
EST 1463

DESIGNER'S SPECIAL™
Turn your imagination into reality! This comprehensive parts assortment contains everything you need to build as many as eight rockets of your own design. Over 75 pieces of excellent savings!
Ship Wt. .9 Kg (2 lbs.)

The Designer's Special™ Contains: Body Tubes: 2 BT-5, 2 BT -20, 2 BT-50, 1 BT-55, 1 BT-60; Nose Cones : 2 NC-5, 2 NC-20, 2 NC-50, 1 NC-55, 1 NC-60; Parachute kits: PK-12, PK-18, PK-24; Streamer Material; Shock Cords and Mounts; Screw Eyes; Engine Hooks ; Engine Mounts; Nose Blocks; Tube Couplers; Transitions; Flat and Heavy Duty Centering Rings; Launch Lugs; Fin Stock; Fin Patterns; and Rocketry Manual.

EMERGENCY REPAIR KIT
EST 2233

FIN ALIGNMENT GUIDE
EST 2231

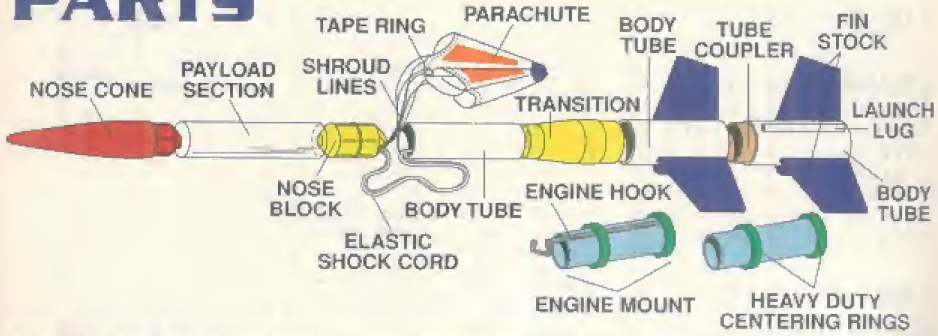
EMERGENCY REPAIR KIT
Tuck this away in your range box and you'll have many of the things you need to field-repair your model rockets. The reclosable pouch contains these items:

Sandpaper	Universal Safety Key
Screw Eyes	Recovery Wadding
White Glue	30 cm (12") Parachute
Shock Cord Mounts	183 cm (72") Shroud Line
Tape Rings	Launch Lugs
Launch Rod Safety Cap	3 mm (1/8") & 6 mm (1/4")
Micro-Clips	Elastic Shock Cords

Ship Wt. . 2 Kg (8 oz.)

FIN ALIGNMENT GUIDE
This useful tool will allow you to position and glue 2 mm (3/32") and 3 mm (1/8") thick fins quickly and easily. Designed to fit body tubes up to a BT-101, three or four-finned designs, aligning the fins at 90° or 120° to each other. Assembles easily with slip-together plastic parts. Adjusts quickly with plastic fin position clips.
Ship Wt.1.4 Kg (3 lbs.)

PARTS



Model rocket kits are constructed of lightweight materials such as balsa wood, paper tubes, and plastic as shown in this diagram. Nearly all matching Estes parts have the same series description number and are interchangeable. For instance, a body tube BT-20 will mate with a nose cone NC-20. A transition adapter TA-2060 will adapt a BT-20 to a BT-60. A 2050 centering ring will center a BT-20 in a BT-50. When ordering parts, use both the product number and the description.

BODY TUBES:
Spiral wound paper. Use tube couplers to connect tubes of the same diameter. Use transition adapters to transition from one tube size to another.

THREE PER PACKAGE

Prod. No.	Size	Inside Diminsion mm/in.	Outside Diminsion mm/in.	Lengh cm/in.
3084	BT-5	13.2 / 0.518	13.8 / 0.544	45.7 / 18.0
3085	BT-20	18.0 / 0.710	18.7 / 0.736	45.7 / 18.0
3086	BT-50	24.1 / 0.950	24.8 / 0.976	45.7 / 18.0
3087	BT-55	32.6 / 1.283	33.7 / 1.325	45.7 / 18.0
3088	BT-56	33.1 / 1.304	34.2 / 1.346	45.7 / 18.0
3089	BT-60	45.7 / 1.80	41.6 / 1.800	45.7 / 18.0
3090	BT-80	65.7 / 2.588	65.7 / 2.60	36.1 / 14.2

NOSE CONES:

Each package of nose cones contains a variety of shapes. Some are one piece, others are two-piece. All have eyelets for shock cord and shroud line attachments.

Actual nose cone shapes may vary from those pictured.

Prod. No. →	3160	3161	3162	3163
Fits Body tube of same number →	NC-5	NC-20	NC-50	NC55
Quantity per package →	5	5	5	4

Actual nose cone shapes may vary from those pictured.

Prod. No. →	3164	3165	3166	3167	3168
Fits Body tube of same number →	NC-56	NC-60a	NC-60b	NC-80a	NC-80b
Quantity per package →	4	2	2	1	1

RECOVERY SYSTEM KITS

PLASTIC PARACHUTE KITS:

These two color parachutes come complete with 'chute material, tape rings, shroud lines, and a snap swivel for quick changes, plus instructions. The solar chute material is a silver coated plastic with red and black markings — great for high visibility. Each weighs less than 8.5 oz (0.2 oz)

Prod. No.	Parachute Diameter
2264	30cm /12"
2267	45cm /18"
2271	60cm /24"
	Solar Chute
2272	45cm /18"

NYLON PARACHUTES:

These highly visible red parachutes are made of durable ripstop nylon. They are pre-assembled complete with shroud lines and are ready to use. These replacement chutes for our Pro Series rockets will fit in any rocket with at least a BT-60 (42 mm or 1.6 inches in diameter) body tube.

Prod. No.	Parachute Diameter
2260	45 cm / 18 "
2261	60 cm / 24"

STREAMER MATERIAL:

This kit contains two different types of streamer material, the first is 50 mm (2.0 in.) by 230 cm (90 in.) red crepe paper and the other is 2 metalized plastic strips (one gold and one red), each 45 mm (1 3/4 in.) wide and 91 cm (36") long. Included are snap swivels for swapping out streamers.
Prod No. 2275

ENGINE MOUNT KITS:

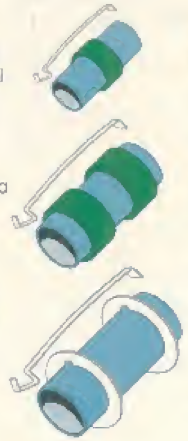
These versatile engine mount kits are great for conversions and your original designs. Easy to assemble, each kit has enough parts for **two** complete mounts and includes detailed, easy-to-follow instructions.

Prod. No.	Engine Type	Fits
3157	Mini	BT-20
3158	Regular	BT-50, 55, 60
3159	D & E	BT-55, 60, 80

The Mini Engine Mount Kit (3157)
Has parts and instructions for making a quick change conversion for flying mini engines in lightweight regular engine powered rockets.

The Regular Engine Mount Kit (3158)
Has parts and instructions to construct a regular engine conversion for lightweight D powered rockets.

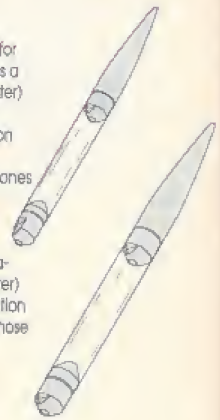
The D and E Engine Mount Kit (3159)
The 3159 has heavy duty construction for our D and E engines and includes the longer E engine hook plus the D engine conversion spacer.



PAYLOAD SECTION KITS:

PS-20 / PS-50 — Payload Sections for BT-20 and BT-50 sized tubes. Kit has a BT-20 clear tube (18 mm in diameter) and a BT-50 clear tube (24 mm in diameter). Also includes a transition that fits a BT-55 to a PS-50 tube. Includes plastic bulkheads, nose cones and complete instructions.
Prod. No. 3194

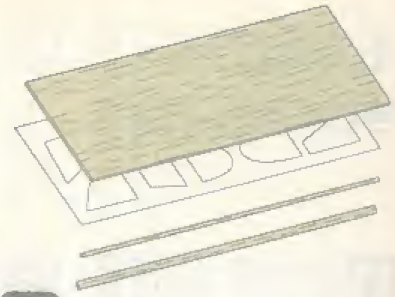
PS-5560 - Payload section that features a BT-60 size (40 mm in diameter) clear payload section and a transition that fits on a BT-55 tube. Includes nose cone.
Prod. No. 3195



We reserve the right to change packaging contents and quantities.

DOWEL, FIN STOCK & PATTERNS PACK:

Includes three different sheets of balsa measuring 2 x 75 x 305 mm (3/32 x 3 x 12 inches), 3 x 75 x 305 mm (1/8 x 3 X 12 inches), and 3.5 x 75 x 305 mm (3/16 x 3 x 12 inches) . Also includes 2 x 300 mm (1/12 x 12") and 3 x 300 mm (1/8 x 12") dowels plus patterns for many favorite fin shapes.
Prod No. 3193.



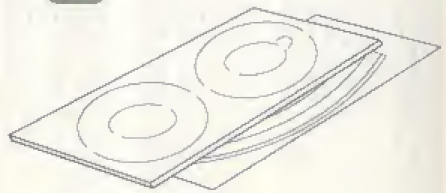
HEAVY DUTY CENTERING RING PACK:

These rings will center a BT-5 tube in a BT-20 (6 ea.), a BT-20 tube into a BT-50 (12 ea.) and a BT-50 in a BT-55 (6 ea.). Ideal for making custom engine mounts.
Prod. No. 2296.

FLAT CENTERING RING PACK:

Kit includes die cut flat rings that can be used to make engine mounts or center tubes into other tubes. Includes instructions and pattern sheets to make paper shrouds for transitions and boat tails. Kit includes rings to center a BT-20 into BT-50, BT-55, BT-56 and BT-60 and rings to center a BT-50 into BT-60 and BT-80. Plus three universal shrouds.

Prod. No. 2295



ENGINE HOOK ACCESSORY PACK:

Pack contains engine hooks for mini engines (1) , regular size engines (3) and E size engines (2). A total of 6 hooks in all. Also includes the E to D conversion spacer.
Prod No. 3143

SHOCK CORDS & MOUNT PACK:

Contains two 3 x 450 mm (1/8 x 18 in.) and one 6 x 910 mm (1/4 x 36") shock cords. Enough for 4 shock cords. Also includes shock cord mounts and complete instructions.
Prod. No. 2275

LAUNCH LUG PACK:

Contains eight 3 mm (1/8") , four 5 mm (3/16") and two 6 mm (1/4") launch lugs. Also includes helpful launch lug construction tips.
Prod. No. 2320

TRANSITION ADAPTERS (LIMITED QUANTITIES)

Small Transitions Pack

Contains balsa transitions from a BT-20 to the following tubes: BT-5, 50, 55 and 60 plus a transition from a BT-5 to BT-50. Five transitions in all.
Prod. No. 2298

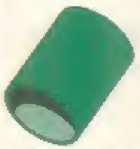
Large Transitions Pack

Contains balsa transitions from a BT-50 to a BT-20 (long taper), BT-55 and 60 . Also includes a transition from BT-55 to BT-60. Four transitions in all.
Prod. No. 2299

TUBE COUPLERS:

Small Tube Coupler Pack

Two couplers each for BT-5, BT-20 and BT-50 body tubes. Perfect for multi-stage rockets and for joining tubes. Detailed hint sheet included.
Prod. No. 2297



Large Tube Coupler Pack

Two couplers each for BT-55, BT-56, BT-60 body tubes plus one to fit a BT-80. Perfect for multi-stage rockets and for joining tubes. Detailed hint sheet included.
Prod. No. 3196

EDUCATIONAL MATERIALS

SOFTWARE

Software available in all 3 formats in spring '95!

PHANTOM™
EST 1207

ALTITRAK™
EST 2232

ASTROCAD™

Written by Michael Gasperi

This easy-to-use computer program is ideal for basic model rocket performance analysis. This program menu has the following items:

Apogee Determination	Model Rocket Design (two versions)
Drag Prediction	Aerodynamic Stability
Performance Prediction	Optimum Weight
Flight Simulation	Elliptical Fin Design

Apple	Macintosh	IBM PC (and compatibles)
EST 9028	EST 9040	EST 9037

Learn about the principles of aerodynamics, physics, and space flight with these three programs.

PHYSICS OF MODEL ROCKETRY™

Action-reaction-inertia-momentum-acceleration-energy-staging and satellites

Apple	Macintosh	IBM PC (and compatibles)
EST 9027	EST 9043	EST 9036

FLIGHT: AERODYNAMICS OF MODEL ROCKETS™

Forces-aerodynamics-stability-drag-center of gravity-center of pressure

Apple	Macintosh	IBM PC (and compatables)
EST 9026	EST 9042	EST 9039

IN SEARCH OF SPACE - INTRODUCTION TO MODEL ROCKETRY™

Flight profile-parts-engines and classification-safety code plus bonus program on multi-staging and igniter installation and function

Apple	Macintosh	IBM PC (and compatables)
EST 9025	EST 9041	EST 9038

PHANTOM™

This model rocket will never leave the ground. A non-flying model that is great for demonstrations, science fairs and exhibits. The clear plastic body tube, nose cone and fin unit allow you to see the recovery parachute, engine mount and a static cutaway C6-5. Ship Wt. .3 Kg (12 oz.)

Specifications:

Length: 32 cm (12.6"); Dia.: 24.8 mm (0.976"); Wt.: 38 g (1.35 oz.)

ALTITRAK™

How high does it fly? Simply follow your rocket in the sights to its highest point, then release the trigger to lock in the reading. Displays your rocket's height directly in meters and elevation angle in degrees. A meters-to-feet conversion table is included. Use two for even greater accuracy.

Idea : Compare the results to predictions made with Astrocad software.

Ship Wt.: .4 Kg (15 oz.)

PUBLICATIONS

MODEL ROCKET NEWS MAGAZINE

Provides articles of interest, technical tips, information about new products, special offers, and much more. Also available through local retailers. Number of pages vary

MODEL ROCKETRY TECHNICAL MANUAL

Handy guide for construction and flight of model rockets. Tips on "scratch building", launch systems, tracking, staging, boost-gliders, and more. 16 pages

EST 2819 (Updated & Revised)

ALPHA BOOK OF MODEL ROCKETRY

An informative book for beginners in model rocketry.

EST 2820

THE LAWS OF MOTION AND MODEL ROCKETRY

The three laws of motion are explained in easily understood terms. Simple examples and experiments are included. 12 pages.

EST 2821

ESTES GUIDE FOR AEROSPACE CLUBS

The perfect source book for organizing and operating a successful model rocket club or ESP chapter. 34 pages.

EST 2817

MODEL ROCKET CONTEST GUIDE

Plan model rocket contests for clubs or schools. Details on competitive events and suggestions on all facets of contest organization. 18 pages.

EST 2815

PROJECTS IN MODEL ROCKETRY

Suggestions on how to plan, prepare, and present research projects, ideas for about one hundred projects. 16 pages

EST 2831

THE CLASSIC COLLECTION

A comprehensive collection of technical reports that makes a valuable reference tool. 48 pages

EST 2845

MODEL ROCKETRY STUDY GUIDE

A logical program for anyone who wants the most from model rocketry. Guides a beginner on the path to becoming an expert rocketeer. TR 8. 52 pages

EST 2841

ALTITUDE PREDICTION CHARTS

A simple system by which aerodynamic drag and other effects can be taken into account in predicting rocket peak altitudes. Technical Report TR-10. 48 pages

EST 2842

AERODYNAMIC DRAG OF MODEL ROCKETS

Gives practical examples of ways to minimize aerodynamic drag and improve performance. Technical Report TR-11. 60 pages

EST 2843

ELEMENTARY MATHEMATICS OF MODEL ROCKET FLIGHT

Information on how to make your own altitude tracker and calculate speeds and accelerations. Technical Note TN-5. 8 pages

EST 2844

ESTES EDUCATOR NEWS

Interesting technical articles, new product information, plus activities and resources on space and model rocketry subjects suitable for classroom use. Available through many local retailers. Number of pages vary

GUIDE FOR TEACHERS AND YOUTH GROUP LEADERS

Introduces you to Estes' model rocket technology and the complete services offered in our educational program. 24 pages

EST 2814

INDUSTRIAL ARTS TEACHERS MANUAL FOR MODEL ROCKETRY

Practical applications of model rocketry in the study of manufacturing, transportation, R & D, communications and construction. 52 pages.

EST 2810

MODEL ROCKET LAUNCH SYSTEMS

Electrical theory of launches is clearly explained, complete with photographs, schematics and study problems. 20 pages.

EST 2811

CAMP LEADER'S MODEL ROCKETRY MANUAL

Proven guide for introducing model rocketry successfully into camp programs. 10 pages.

EST 2822

VIDEO – MODEL ROCKETRY - THE LAST FRONTIER*

Capture the excitement of model rocketry in this full color VHS video presentation, narrated by and featuring William Shatner of Star Trek** fame! An excellent primer to model rocketry with dramatic launch footage and graphic, easy-to-understand illustrations. 15 minutes.

EST 2792

CURRICULA

SCIENCE AND MODEL ROCKETS

For Grades 5, 6, 7, & 8

Written by Sylvia Nolte, Ed. D.; Based on Nancy Stoop's Course Outline. 78 pages

- Day-to-day lesson plans with specific goals and objectives
- Excellent for teaching science and mathematics including: Newton's Laws of Motion; Geometry; Principles of Flight; Formula Calculations; Simple Aerodynamics; Graphing
- Includes backgrounds for the educator, overhead transparencies, activity sheets, material requirements and awards for the students

EST 2847

PHYSICS AND MODEL ROCKETS

For Grades 8, 9, 10, & 11

Written by Sylvia Nolte, Ed. D.; Edited by Thomas Beach, PhD and Tim Van Milligan, A.E. 108 pages

- The next logical step after the Science and Model Rockets Curriculum
- A ready-to-use lesson plan describing Newton's Laws of Motion and aerodynamic principles applied to model rockets
- Includes teacher background, student manual with workbook, math extensions, transparencies and activity sheets

EST 2848

MATHEMATICS AND MODEL ROCKETS

For Grades 5-12

Written by Sylvia Nolte, Ed. D.; Based on a course by Harold McConnell, PhD. 98 pages

- Take the next step - rocket engineering!
- Explore the interaction between centers of pressure and mass
- Apply mathematics and graphics to rocket design
- Wind tunnel experimentation and evaluation

EST 2849

INDUSTRIAL TECHNOLOGY AND MODEL ROCKETS

For Grades 6-12

Written by Richard Kalk, Ed.D. and Steve Wash; edited by James H Kranich, P.E.

- Applies the vast range of industrial technology subjects through the design, development and study of rocketry.
- A ready-to-use curriculum, certain to reach any special interest
- Use as a total program or individual sections to augment existing curriculum

EST 2850 ***Available spring '95!***

AVIATION AND LIGHT GLIDERS

For Grades 2,3, and 4

Written by James H. Kranich, M.S., P.E.

- An excellent introduction to aviation for the earlier grades.
- This ready-to-use curriculum covers the history of aviation, aerodynamics, airport facilities, aviation related topics from a pilot's perspective and field day activities.
- Complete with teacher background information, student activity sheets, games and reproducible student certificates of achievement.
- Designed for use with the Estes "Hi-Lite" Light Glider (EST 4000).

EST 2851 ***Available spring '95!***

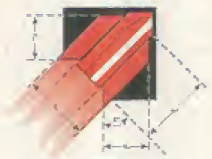
Student Materials

ACHIEVEMENT CERTIFICATES

PARTICIPATED	EST 2836
WON	EST 2837
OUTSTANDING ACHIEVEMENT	EST 2838

FLIGHT DATA SHEETS	EST 2824
EVENTS SCORE SHEETS	EST 2825
REPRODUCTION MASTERS	EST 2826

BULK PACKS



ESTES EDUCATOR™

Engines, launch system, glue and finishing supplies not included.
Avg. Ship Wt. 1.4 Kg (3 lbs.)

Save with the purchase of economical bulk packs for your group! No fancy packaging! Each rocket pack contains 12 rockets plus extra small parts, just in case!

E2X® Series Rockets - 12 per bulk pack

Gnome™ Bulk Pack - See page 13 for description
EST 1750
Alpha® III Bulk Pack - See page 13 for description
EST 1751
Bandit™ Bulk Pack - See page 12 for description
EST 1752

Generic E2X® Bulk Pack - See picture and symbols below
- Super easy to build
- All white - color with markers or paint or leave white!
- Comes with a variety of foil self-stick decals for individual customizing

Specifications:
Length: 38.1 cm (15"); Dia.: 24.6 mm (0.976"); Wt.: 36 g (1.27 oz.); Engines: A8-3 (First Flight), 1/2A6-2, A8-5, B4-4, B4-6, B6-6, B8-5, C6-5, C6-7
EST 1764

Explorer™ Series Rockets - 12 per bulk pack

Scrambler™ Bulk Pack - See page 31 for description
EST 1759
Tornado™ Bulk Pack - See page 28 for description
EST 1758
Loadstar™ Bulk Pack - See picture and symbols below
- Advanced two-stage payloader
- Huge clear plastic payload section - fly one or two-stage for performance experiments
- Maximum altitude using C6-0 and C6-7 engines: 305 Meters (1000 ft.)

Specifications:
Length: 62.5 cm (24.625"); Dia.: 41.6 mm (1.637"); Wt. (without payload): 80.1 g (2.83 oz.); Engines: Single Stage - A8-3, B4-4 (First Flight), B6-4, B8-5, C6-5; OR: First Stage - B6-0 (First Flight), C6-0; Second Stage - A8-5 (First Flight), B4-6, B6-6, C6-7
EST 1760

Engine Bulk packs are convenient and include everything your students will need to prepare their rockets for flight

Model Rocket Engine Bulk Packs

Include: 24 rocket engines; 30 model rocket igniters, 24 reusable igniter plugs; 75 - 11.4 cm (4.5") squares of recovery wadding - enough for approximately 25 launches.

1/2A3-2T Bulk Pack	EST 1780	B6-4 Bulk Pack	EST 1783
A8-3 Bulk Pack	EST 1781	B6-0/B6-6 Bulk Pack	EST 1784
A8-5 Bulk Pack	EST 1782	C5-3 Bulk Pack	EST 1785

Your students will love creating their own decor on these fun-to-build Generic E2X rockets!

BULK PACKS

Beta™ Series Rockets - 12 per bulk pack

Performance™ Rocket Bulk Pack - see picture and symbols below
- Self contained experiment in drag coefficients
- Students choose from 12 different fin designs plus boattail option
- Stability and tracking technical reports provided
- Includes 2 altitude trackers for performance comparison
- Includes a variety of decals, allowing students to individualize their rockets.

Specifications:
Dia.: 24.6 mm (0.976"); Length and weight will vary with chosen design; Engines: A8-3 (First Flight), 1/2A6-2, A8-5, B4-4, B4-6, B6-6, B8-5, C6-5, C6-7
EST 1765

Altitude varies with rocket

Viking™ Bulk Pack - See page 20 for description
EST 1755
Alpha® Bulk Pack - See page 20 for description
EST 1756
Wizard™ Bulk Pack - See page 25 for description
EST 1754
Nova Payloader™ Bulk Pack - See page 23 for description
EST 1757

ESTES TEACHER'S STARTER SET

ESTES EDUCATOR™

Demonstrate to yourself and your students the power of educational model rocketry. Ship Wt. 1.8 Kg (4 lbs.)
- Designed specifically for the educator just beginning model rocketry studies
- Become familiar with Estes model rocket technology and then use the enclosed booklets to introduce your students to the excitement of hands-on learning!

Skill Level 1
Set contains:
- Big Bertha™ two feet tall single engine demonstration rocket. *** parachute recovery
- Glue, sandpaper, and razor blade to build the Big Bertha™*
- Electron Beam® control system**
- Porta-Pad® II launch pad**
- Engines, recovery wadding, igniters and plugs included - enough for six launches
- Teachers and Youth Group Leaders Guide
- Science and math applications using model rocketry
- Estes catalog

EST 1456

Not display packaged *** Big Bertha rocket subject to change
*Paint not included
**The Electron Beam® and the Porta-Pad® II can be used to launch most rockets shown in this catalog except Pro™ Series and Estes R/C
4 AA alkaline batteries required not included

NAR SAFETY CODE

(Effective 10-91)

1. Materials--My model rocket will be made of lightweight materials such as paper, wood, rubber, and plastic suitable for the power used and the performance of my model rocket. I will not use any metal for the nose cone, body, or fins of a model rocket.

2. Motors/Engines--I will use only commercially-made NAR certified model rocket engines in the manner recommended by the manufacturer. I will not alter the model rocket engine, its parts, or its ingredients in any way.

3. Recovery--I will always use a recovery system in my model rocket that will return it safely to the ground so it may be flown again. I will use only flame-resistant recovery wadding if required.

4. Weight and Power Limits--My model rocket will weigh no more than 1500 grams (53 oz.) at lift-off, and its rocket engines will produce no more than 320 Newton-seconds (4.45 Newtons equal 1.0 pound) of total impulse. My model rocket will weigh no more than the engine manufacturer's recommended maximum lift-off weight for the engines used, or I will use engines recommended by the manufacturer for my model rocket.

5. Stability--I will check the stability of my model rocket before its first flight, except when launching a model rocket of already proven stability.

6. Payloads--Except for insects, my model rocket will never carry live animals or a payload that is intended to be flammable, explosive, or harmful.

7. Launch Site--I will launch my model rocket outdoors in a cleared area, free of tall trees, power lines, buildings, and dry brush and grass. My launch site will be at least as large as that recommended in the following table.

LAUNCH SITE DIMENSIONS

Installed Total Impulse (Newtons-seconds)	Equivalent Engine Type	Minimum Site Dimension (feet)	(meters)
0.00– 1.25	1/4A & 1/2A	50	15
1.26– 2.50	A	100	30
2.51– 5.00	B	200	60
5.01– 10.00	C	400	120
10.01– 20.00	D	500	150
20.01– 40.00	E	1000	300
40.01– 80.00	F	1000	300
80.01–160.00	G	1000	300
160.01–320.00	2Gs	1500	450

8. Launcher--I will launch my model rocket from a stable launching device that provides rigid guidance until the model rocket has reached a speed adequate to ensure a safe flight path. To prevent accidental eye injury, I will always place the launcher so that the end of the rod is above eye level or I will cap the end of the launch rod when approaching it. I will cap or disassemble my launch rod when not in use and I will never store it in an upright position. My launcher will have a jet deflector device to prevent the engine exhaust from hitting the ground directly. I will always clear the area around my launch device of brown grass, dry weeds, and other easy-to-burn materials.

9. Ignition System--The system I use to launch my model rocket will be remotely controlled and electrically operated. It will contain a launching switch that will return to "off" when released. The system will contain a removable safety interlock in series with the launch switch. All persons will remain at least 15 feet (5 meters) from the model rocket when I am igniting model rocket engines totalling 30 Newton-seconds or less of total impulse and at least 30 feet (9 meters) from the model rocket when I am igniting model rocket engines totalling more than 30 Newton-seconds of total impulse. I will use only electrical igniters recommended by the engine manufacturer that will ignite model rocket engine(s) within one second of actuation of the launching switch.

10. Launch Safety--I will ensure that people in the launch area are aware of the pending model rocket launch and can see the model rocket's liftoff before I begin my audible five-second countdown. I will not launch a model rocket using it as a weapon. If my model rocket suffers a misfire, I will not allow anyone to approach it or the launcher until I have made certain that the safety interlock has been removed or that the battery has been disconnected from the ignition system. I will wait one minute after a misfire before allowing anyone to approach the launcher.

11. Flying Conditions--I will launch my model rocket only when the wind is less than 20 miles (30 kilometers) an hour. I will not launch my model rocket so it flies into clouds, near aircraft in flight, or in a manner that is hazardous to people or property.

12. Pre-Launch Test--When conducting research activities with unproven model rocket designs or methods I will, when possible, determine the reliability of my model rocket by pre-launch tests. I will conduct the launching of an unproven design in complete isolation from persons not participating in the actual launching.

13. Launch Angle--My launch device will be pointed within 30 degrees of vertical. I will never use model rocket engines to propel any device horizontally.

14. Recovery Hazards--If a model rocket becomes entangled in a power line or other dangerous place, I will not attempt to retrieve it.

As a member of the Estes Model Rocketry Program, I promise to faithfully follow all rules of safe conduct as established in the above code.

Signature _____

***This is the official Model Rocketry Safety Code of the National Association of Rocketry and the Model Rocket Manufacturers Association.**
Estes Note: The largest "model" rocket engine as defined by CPSC is an "F" (80 NS). To launch rockets weighing over one pound including propellant or rockets containing more than 4 oz. of propellant (net weight), you may need to obtain a waiver from the FAA. Check your telephone directory for the FAA office nearest you. Or contact Estes for FAA notification and waiver information.

NAR

RCHTA
RADIO CONTROL HOBBY TRADE ASSOCIATION
P.O. Box 98116 Schaumburg, IL 60168-1116

INDEX

FULL ONE YEAR WARRANTY

Your Estes product is warranted against defects in materials or workmanship for one year from the date of the original purchase. Any Estes product, except computer software, which, because of a manufacturing mistake, malfunctions or proves to be defective within the one-year warranty period will be repaired or replaced, at Estes' option and at no charge to you, provided it is returned to Estes with proof of purchase.

This warranty does not cover incidental or consequential damage to persons or property caused by the use, abuse, misuse, failure to comply with operating instructions or improper storage of the warranted product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary state to state.

For repair or replacement under this warranty, please return the defective part of your Estes product with proof of purchase to:

Estes Industries
Customer Service Department
1295 H Street
Penrose, CO 81240

Estes Light Gliders

- *Totally new line of flying model airplane kits*
- *High performance capabilities*
- *Ultra-light weight design*
- *Very easy-to-build free-flight gliders*
- *No special tools for building or flying*

HI-LITE™ EST 4000

Bright colored pre-cut foam wing and plastic parts make this hot performer very easy to build. The Hi-Lite requires no special tools and is a very efficient rubber-band powered, free-flight model. You can even change the flight path with its adjustable control surfaces. Comes complete with pre-assembled plastic power propeller and landing gear.
Wing span: 33 cm (13").

PHANTOM™ EST 4001

This rugged tow-line glider boasts a wing span of 60 cm (23.5"). Tow it high in the sky like a kite and then release it for thermal hunting! Or you can simply fly it as a chuck glider. Features molded plastic wing ribs, nose piece and connecting pieces. The bamboo pieces for the wing & tail assemblies are pre-shaped. Easy-to-use Flex-Coat™ covering material has a wild "flame" decor.
Wing span - 60 cm (23.5").

MIRAGE™ EST 4002

This large, efficiently rubber-band powered, propeller driven glider is great looking and has fantastic performance. Features plastic molded ribs, landing gear, propeller, wing and tail assemblies. Pre-shaped bamboo for the wings, stab and rudder frames and easy-to-use Flex-Coat covering material make this model a cinch to build.
Wing span: 50 cm (19.5").

FLIGHT MASTER™ EST 4003

The giant of the rubber-band powered, propeller driven model airplanes, the Flight Master features a huge 60 cm (23.5") wing span. This glider comes complete with pre-built landing gear and propeller. Colorful Flex-Coat covers the preshaped bamboo wing, stab and rudder frames. The plastic ribs, wing and tail assemblies makes this kit easy to build. Wing span: 60 cm (23.5")

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